

# **Air Force Institute of Technology**

## **Research Report 2007**

Period of Report: 1 October 2006 to 30 September 2007

Graduate School of Engineering and Management

**GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT  
AIR FORCE INSTITUTE OF TECHNOLOGY  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

Approved For Public Release: Distribution Unlimited

# **AIR FORCE INSTITUTE OF TECHNOLOGY**

Wright-Patterson Air Force Base, Ohio

Reproduction of all or part of this document is authorized.

This report was edited and produced by the Office of Research and Sponsored Programs, Graduate School of Engineering and Management, Air Force Institute of Technology. The Department of Defense, other federal government, and non-government agencies supported the work reported herein but have not reviewed or endorsed the contents of this report.

For additional information, please call or email:

937-255-3633  
DSN 785-3633  
research@afit.edu

or visit the AFIT website: [www.afit.edu](http://www.afit.edu)



## **Air Force Institute of Technology**

### **Research Report 2007**

### **Foreword**

Research is the cornerstone of the dramatic advances in air, space, and cyber technology that underpin the nation's ability to meet the international and homeland security challenges of tomorrow. Research is also an integral part of graduate education, providing graduates with in-depth knowledge, critical thinking skills, and problem solving abilities. At the Air Force Institute of Technology (AFIT), our faculty and students engage in research with the goal of sustaining the technological supremacy of the United States Air Force (USAF) and the Department of Defense (DoD).

AFIT maintains active partnerships with our Air Force's organizations and operational communities as well as the DoD and other federal agencies to maximize the contributions of our research programs to national needs. Our faculty and students also engage in collaborations with researchers at universities throughout the nation to advance the state-of-the-art in a variety of disciplines. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry through Cooperative Research and Development Agreements (CRADAs) whenever appropriate.

This Research Report is prepared annually to report on the significant contributions of this institution; to solicit continued involvement and support from our Air Force, DoD, and other federal partners; and to encourage new sponsors to participate in AFIT's research programs. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

**Heidi R. Ries, Ph.D.**  
**Dean for Research**  
**Graduate School of Engineering**  
**and Management**



## Table of Contents

|                |                                                                                           |           |
|----------------|-------------------------------------------------------------------------------------------|-----------|
| <b>1.</b>      | <b>INTRODUCTION .....</b>                                                                 | <b>1</b>  |
| <b>1.1.</b>    | <b>OVERVIEW.....</b>                                                                      | <b>1</b>  |
| <b>1.2.</b>    | <b>THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH<br/>COLLABORATION .....</b> | <b>1</b>  |
| <b>2.</b>      | <b>SPECIAL RECOGNITIONS.....</b>                                                          | <b>5</b>  |
| <b>2.1.</b>    | <b>FACULTY FELLOWS .....</b>                                                              | <b>5</b>  |
| <b>2.2.</b>    | <b>PROFESSIONAL CERTIFICATIONS.....</b>                                                   | <b>6</b>  |
| <b>2.3.</b>    | <b>RESEARCH AWARDS .....</b>                                                              | <b>8</b>  |
| <b>2.3.1.</b>  | <b>FACULTY.....</b>                                                                       | <b>8</b>  |
| <b>2.3.2.</b>  | <b>STUDENTS .....</b>                                                                     | <b>10</b> |
| <b>3.</b>      | <b>RESEARCH STATISTICS.....</b>                                                           | <b>12</b> |
| <b>3.1.</b>    | <b>RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS .....</b>                                    | <b>12</b> |
| <b>3.2.</b>    | <b>RESEARCH AND CONSULTING OUTPUT MEASURES .....</b>                                      | <b>14</b> |
| <b>3.3.</b>    | <b>RESEARCH AND CONSULTING SPONSORSHIP.....</b>                                           | <b>15</b> |
| <b>3.4.</b>    | <b>OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND<br/>MANAGEMENT .....</b>    | <b>17</b> |
| <b>4.</b>      | <b>SPONSORSHIP OF STUDENT RESEARCH.....</b>                                               | <b>19</b> |
| <b>4.1.</b>    | <b>DOCTORAL DISSERTATIONS.....</b>                                                        | <b>19</b> |
| <b>4.1.1.</b>  | <b>OFFICE OF THE SECRETARY OF THE AIR FORCE.....</b>                                      | <b>19</b> |
| <b>4.1.2.</b>  | <b>AIR COMBAT COMMAND .....</b>                                                           | <b>19</b> |
| <b>4.1.3.</b>  | <b>AIR EDUCATION AND TRAINING COMMAND.....</b>                                            | <b>19</b> |
| <b>4.1.4.</b>  | <b>AIR FORCE TECHNICAL APPLICATIONS CENTER .....</b>                                      | <b>19</b> |
| <b>4.1.5.</b>  | <b>AIR FORCE RESEARCH LABORATORY .....</b>                                                | <b>19</b> |
| <b>4.1.6.</b>  | <b>US ARMY RESEARCH DEVELOPMENT AND ENGINEERING COMAND .....</b>                          | <b>20</b> |
| <b>4.1.7.</b>  | <b>DEPARTMENT OF ENERGY .....</b>                                                         | <b>21</b> |
| <b>4.1.8.</b>  | <b>THE NATIONAL ACADEMY OF SCIENCES .....</b>                                             | <b>21</b> |
| <b>4.2.</b>    | <b>MASTER'S THESES .....</b>                                                              | <b>22</b> |
| <b>4.2.1.</b>  | <b>HQ UNITED STATES AIR FORCE .....</b>                                                   | <b>22</b> |
| <b>4.2.2.</b>  | <b>OFFICE OF THE SECRETARY OF THE AIR FORCE.....</b>                                      | <b>22</b> |
| <b>4.2.3.</b>  | <b>AIR COMBAT COMMAND .....</b>                                                           | <b>22</b> |
| <b>4.2.4.</b>  | <b>AIR EDUCATION AND TRAINING COMMAND.....</b>                                            | <b>23</b> |
| <b>4.2.5.</b>  | <b>AIR FORCE MATERIEL COMMAND .....</b>                                                   | <b>28</b> |
| <b>4.2.6.</b>  | <b>AIR MOBILITY COMMAND .....</b>                                                         | <b>38</b> |
| <b>4.2.7.</b>  | <b>AIR FORCE SPACE COMMAND.....</b>                                                       | <b>38</b> |
| <b>4.2.8.</b>  | <b>USAF FIELD OPERATING AGENCIES.....</b>                                                 | <b>38</b> |
| <b>4.2.9.</b>  | <b>DEPARTMENT OF DEFENSE .....</b>                                                        | <b>39</b> |
| <b>4.2.10.</b> | <b>UNITED STATES ARMY .....</b>                                                           | <b>40</b> |
| <b>4.2.11.</b> | <b>UNITED STATES NAVY .....</b>                                                           | <b>40</b> |
| <b>4.2.12.</b> | <b>DEPARTMENT OF ENERGY .....</b>                                                         | <b>40</b> |
| <b>4.2.13.</b> | <b>OTHER FEDERAL AGENCIES .....</b>                                                       | <b>41</b> |
| <b>4.3.</b>    | <b>GRADUATE RESEARCH PAPERS.....</b>                                                      | <b>42</b> |
| <b>4.3.1.</b>  | <b>HQ UNITED STATES AIR FORCE .....</b>                                                   | <b>42</b> |
| <b>4.3.2.</b>  | <b>OFFICE OF THE SECRETARY OF THE AIR FORCE.....</b>                                      | <b>42</b> |
| <b>4.3.3.</b>  | <b>AIR COMBAT COMMAND .....</b>                                                           | <b>42</b> |
| <b>4.3.4.</b>  | <b>AIR EDUCATION AND TRAINING COMMAND.....</b>                                            | <b>43</b> |
| <b>4.3.5.</b>  | <b>AIR FORCE MATERIEL COMMAND .....</b>                                                   | <b>44</b> |
| <b>4.3.6.</b>  | <b>AIR MOBILITY COMMAND .....</b>                                                         | <b>45</b> |
| <b>4.3.7.</b>  | <b>AIR FORCE SPACE COMMAND.....</b>                                                       | <b>46</b> |
| <b>4.3.8.</b>  | <b>UNITED STATES AIR FORCES IN EUROPE .....</b>                                           | <b>46</b> |
| <b>4.3.9.</b>  | <b>DEPARTMENT OF DEFENSE .....</b>                                                        | <b>46</b> |

|      |                                                                          |     |
|------|--------------------------------------------------------------------------|-----|
| 5.   | ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION.....            | 47  |
| 5.1. | DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS.....                          | 48  |
| 5.2. | DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING.....                   | 69  |
| 5.3. | DEPARTMENT OF ENGINEERING PHYSICS.....                                   | 111 |
| 5.4. | DEPARTMENT OF MATHEMATICS AND STATISTICS.....                            | 126 |
| 5.5. | DEPARTMENT OF OPERATIONAL SCIENCES .....                                 | 133 |
| 5.6. | DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT.....                    | 155 |
| 6.   | RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION.....                | 172 |
| 6.1. | ADVANCED NAVIGATION TECHNOLOGY CENTER.....                               | 173 |
| 6.2. | CENTER FOR DIRECTED ENERGY .....                                         | 177 |
| 6.3. | CENTER FOR CYBERSPACE RESEARCH .....                                     | 184 |
| 6.4. | CENTER FOR MASINT STUDIES AND RESEARCH.....                              | 197 |
| 6.5. | CENTER FOR OPERATIONAL ANALYSIS.....                                     | 199 |
| 6.6. | CENTER FOR SPACE STUDIES AND RESEARCH.....                               | 206 |
| 6.7. | CENTER FOR SYSTEMS ENGINEERING .....                                     | 207 |
|      | APPENDICES .....                                                         | 208 |
|      | APPENDIX A: FACULTY CREDENTIALS.....                                     | 208 |
|      | APPENDIX B: POST-DOCTORAL AND OTHER RESEARCH ASSOCIATES CREDENTIALS..... | 238 |
|      | APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS.....                         | 240 |
|      | APPENDIX D: INFORMATION FOR OBTAINING A COPY OF A THESIS.....            | 242 |

(INTENTIONALLY BLANK)

# 1. INTRODUCTION

## 1.1. OVERVIEW

This Research Report presents the FY07 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF, or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DoD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through CRADAs. Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A or via the AFIT Yellow Pages at [www.afit.edu](http://www.afit.edu)

Additional information on the research programs at AFIT may also be found on the research web home page at <http://www.afit.edu/en/enr/>. The Office of Research and Sponsored Programs, Graduate School of Engineering and Management can be reached at 937-255-3633, (DSN 785-3633) or by email: [research@afit.edu](mailto:research@afit.edu). The primary points of contact are Dr. Michael J. Caylor, Director of Sponsored Programs, 937-255-3636 x7104, DSN 785-3636 x7104 and Dr. Heidi R. Ries, Dean for Research, 937-255-3636 x4544, DSN 785-3636 x4544.

## 1.2. THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

As detailed in the 2007-2008 catalog at <http://www.afit.edu/en/ener/catalog.cfm>, AFIT offers Master's and Doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all of these disciplines, research is an integral component of graduate education, developing an individual student's skills and providing new knowledge of interest to many.

A brief listing of each department's research areas of emphasis appears below. Please contact the faculty, relevant departmental office, or the Office of Research and Sponsored Programs for further information, or visit the Graduate School of Engineering and Management departmental websites at [www.afit.edu](http://www.afit.edu)

The [Department of Aeronautics and Astronautics](#) invites research topic proposals and collaborative suggestions for the Aeronautical, and Astronautical engineering programs. The following list highlights the Department's research specialties:

**Aeroelasticity and Design Optimization**  
**Aerospace Structures and Materials**  
**Analysis of Computer Turbines**  
**Autonomous Control of UAVs**  
**Computational Fluid Dynamics**  
**Control of High Performance Aircraft**  
**Dynamic Flight Simulation**  
**Experimental Fluid Dynamics**  
**High Velocity Impact**  
**Impact Dynamics**  
**Inflatable Space Structures**

**Materials and Structural Analysis**  
**Mechanics of Materials and Structures**  
**Micro Air Vehicles**  
**Non-Linear Dynamics**  
**Reentry Dynamics**  
**Rocket & Space Propulsion**  
**Rotocraft Aeromechanics**  
**Satellite Cluster Dynamics, Navigation,  
& Control**  
**Spacecraft Dynamics & Control**

The [Department of Electrical and Computer Engineering](#) invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering, and Computer Science programs, as well as the **Advanced Navigation Technology Center (ANT)** and the **Center for Cyberspace Research (CCR)**. The following list highlights the Department's research specialties:

**Advanced Security-focused Computing Architectures**  
**Artificial Intelligence**  
**Automatic Target Recognition**  
**Communications/Radar**  
**Computer Communication Networks**  
**Cyber Operations and Security**  
**Electromagnetics/Low Observables**  
**Evolutionary Algorithms**  
**Guidance, Navigation and Control**

**Information Visualization**  
**Information Engineering, Exploitation, and Dissemination**  
**Micro and Nanosystems**  
**Parallel and Distributed Processing**  
**Signal and Image Processing**  
**Software Engineering**  
**Wireless Networks**  
**Wireless Sensor Networks**

The [Department of Engineering Physics](#) invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Electro-Optics (jointly operated with the Department of Electrical and Computer Engineering), and Materials Science (jointly operated with the Department of Aeronautics and Astronautics) programs, as well as the **Center for Directed Energy (CDE)** and the **Center for MASINT Studies and Research (CMSR)**. The following list highlights the Department's research specialties within these programs:

**Combating Weapons of Mass Destruction**  
**Computational Physics**  
**Counterproliferation**  
**Directed Energy Weapons**  
**Electronic and Photonic Materials**

**Lasers and Electro-Optics**  
**Nuclear Weapons and Effects**  
**Remote Sensing and Signature Analysis**  
**Space Weather**

The [Department of Mathematics and Statistics](#) invites research topic proposals and collaborative suggestions for the following research specialties:

**Acoustic Wave Scattering**  
**Category Theory**  
**Combinatorial Optimization**  
**Design of Experiments**  
**Electromagnetics**  
**Gait Recognition**  
**Image Analysis**

**Information Fusion**  
**Multiscale Methods**  
**Nonlinear Optimization**  
**Numerical Analysis**  
**Partial Differential Equations**  
**Reliability**  
**Wavelets**

The [Department of Operational Sciences](#) invites research topic proposals and collaborative suggestions within the areas of Operations Research, Logistics Management programs, as well as the **Center for Operational Analysis (COA)**. The following list highlights the Department's research specialties:

**Applied/Multivariate Statistics**  
**Capacity and Queue Modeling**  
**Decision and Risk Analysis**  
**Information Operations/Information Warfare**  
**Inventory Management/Theory**  
**Math Programming and Optimization**  
**Network Modeling**

**Operational Modeling and Simulation**  
**Operational Problems and Heuristic Modeling**  
**Sensor/Classifier Fusion**  
**Space and International Logistics**  
**Space Logistics Modeling**  
**Stochastic Systems Analysis**  
**Supply Chain Management**

The [Department of Systems and Engineering Management](#) is seeking research topic proposals and collaborative suggestions for the Cost Analysis, Engineering Management, Environmental Engineering and Science, Information Resource Management, Research and Development Management programs, as well as the **Center for Systems Engineering (CSE)**. The following list highlights the Department's research specialties:

**Applied Environmental Sciences**  
**Cost Analysis**  
**Crisis Project Management**  
**Crisis Engineering Services Management**  
**Crisis Knowledge Management**  
**Defense Product Development**  
**Economics and Finance**  
**Facility and Infrastructure Management**  
**Information Assurance and Security**  
**Knowledge and Strategic Information Management**  
**Leadership and Management**

**Multidisciplinary Distributed Cognition**  
**Nanotoxicity and Pharmacokinetic Modeling**  
**Operational Information Integration**  
**Organizational Change and Theory**  
**Organizational Control Center Performance**  
**Sustainable Development**  
**System Dynamics Modeling**  
**Systems Engineering**  
**Technology Development and Application**

Another avenue for educational and research collaboration with the Graduate School of Engineering and Management is through association with one or more of **AFIT's Research Centers**. A brief listing of each Center's educational or research areas of emphasis appears below. Please contact the Centers directly (see Ch. 6), or contact the Office of Research and Sponsored Programs for further information (937-255-3633, DSN 785-3633).

The [Advanced Navigation Technology \(ANT\) Center](#) is a forward-looking navigation research center seeking to identify and solve tomorrow's most challenging navigation problems by focusing on three research thrusts: multiple-vehicle autonomous navigation and control, non-GPS precision navigation, and robust GPS navigation.

The [Center for Directed Energy \(CDE\)](#) is dedicated to Air Force and DoD research in high energy lasers (HEL), high power microwaves (HPM), and their enabling technologies. The Center is an advocate for transitioning these systems to the battlefield through vigorous scientific and engineering research, graduate education programs and diverse consulting activities.

The [Center for Cyberspace Research \(CCR\)](#) is one of the National Security Agency (NSA) and Department of Homeland Security's designated Centers of Academic Excellence in Information Assurance Education (CAE/IAE). CCR is also a National Science Foundation Cyber Corp institution. CCR's objectives are to provide cutting-edge offensive and defensive research solutions for cyberspace and cyber security applications and produce a cadre of technically educated leaders for the DoD and federal Government.

The [Center for MASINT Studies and Research \(CMSR\)](#) is focused on Air Force and Department of Defense Measurement and Signature Intelligence (MASINT) scientific, technical and operational activities through graduate research programs. CMSR is a national resource for educating a new generation of MASINT professionals.

The [Center for Operational Analysis \(COA\)](#) directs defense relevant research and timely technology transfer in providing approaches and solutions to current and future operational and resource issues while developing critical and forward thinking analysts, managers, and leaders.

The [Center for Systems Engineering \(CSE\)](#) is established to promote education, training, research, and consultation throughout the DoD in the best practices of Systems Engineering, Systems Architecture, Evolutionary Acquisition, Risk Management, and Total Life Cycle Project Management.

## 2. SPECIAL RECOGNITIONS

### 2.1. FACULTY FELLOWS

**Badiru, Adedeji B.**, Professor of Systems and Engineering Management, Fellow of the Institute of Industrial Engineers, Fellow of the Nigerian Academy of Engineering.

**Bridgman, Charles J.**, Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

**Elrod, William E.**, Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

**Franke, Milton E.**, Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

**Houpis, Constantine H.**, Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Mall, Shankar**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

**Maybeck, Peter S.**, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Pachter, Meir**, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

**Palazotto, Anthony N.**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Civil Engineers.

**Perram, Glen P.**, Professor of Physics, Department of Engineering Physics, Fellow of the Directed Energy Professional Society.

**Ruggles-Wrenn, Marina B.**, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

**Soni, Som R.**, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society for Composites.

**Thomas, M. U.**, Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the American Society of Quality, Fellow of the Institute for Operations Research and Management Sciences.

**Torvik, Peter J.**, Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Life Fellow of American Society of Mechanical Engineers International, Fellow of the Ohio Academy of Science.

## **2.2. PROFESSIONAL CERTIFICATIONS**

**Anthenien, Ralph A.**, Professional Engineer, State of Ohio

**Badiru, Adedeji B.**, Leadership Certificate, University of Tennessee Leadership Institute

**Badiru, Adedeji B.**, Professional Engineer, State of Oklahoma

**Baldwin, Rusty O.**, Professional Engineer, State of Ohio

**Baldwin, Rusty O.**, Certified Information Systems Security Professional (CISSP)

**Barelka, Alex J.**, Certified Project Management Professional (PMP)

**Cunningham, William A. III**, Certified Transportation and Logistics (CTL) by the American Society of Transportation and Logistics (AST&L)

**Goltz, Mark N.**, Hazardous Waste Management Specialty Certification as a Diplomate Environmental Engineer, American Academy of Environmental Engineers

**Goltz, Mark N.**, Professional Engineer, State of Minnesota

**Goltz, Mark N.**, Board Certified Environmental Engineer, American Academy of Environmental Engineers

**Greendyke, Robert B.**, Professional Engineer, State of Texas

**Grimaila, Michael R.**, Certified Information Systems Security Professional (CISSP), International Information Systems Security Certification Consortium ((ISC)<sup>2</sup>)

**Grimaila, Michael R.**, INFOSEC Assessment Methodology (IAM) and INFOSEC Evaluation Methodology (IEM) Certification, National Security Agency INFOSEC Assurance Training and Rating Program (NSA/IATRP)

**Grimaila, Michael R.**, Gold Standard, Level 4, Security Essentials Certification (GSEC) from the SysAdmin, Audit, Network, Security Institute's (SANS) Global Information Assurance Certification (GIAC) Program

**Grimaila, Michael R.**, Certified Information Security Manager (CISM), Information Systems Audit and Control Association (ISACA)

**Heil, Michael L.**, Professional Engineer, State of Colorado

**Houpis, Constantine H.**, Professional Engineer, State of Ohio

**Kunz, Donald L.**, Professional Engineer, Commonwealth of Virginia

**Mattioda, Daniel D.**, FAA Airframe and Powerplant License

**Mattioda, Daniel D.**, FCC Ground Radio Operators License with Radar Endorsement

**Mullins, Barry E.**, Professional Engineer, State of Colorado

**Palazotto, Anthony N.**, Professional Engineer, State of Ohio

**Perram, Glen P.**, Professional Engineer, State of Ohio

**Quinn, Dennis W.**, Professional Engineer, State of Ohio

**Reeder, Mark F.**, Professional Engineer, State of Ohio

**Slagley, Jeremy**, Certified Industrial Hygienist, American Board of Industrial Hygienists

**Thomas, M. U.**, Professional Engineer, State of Michigan

**Turner, J. M.**, Certified Enterprise Architect, Federal Enterprise Architecture Certification Institute

## **2.3. RESEARCH AWARDS**

### **2.3.1. FACULTY**

#### **BALDWIN, RUSTY O.,**

General Bernard A. Schriever Award for contributions to advancing aerospace power, technology, and doctrine, 2006.

#### **CANFIELD, ROBERT A.,**

American Institute of Aeronautics and Astronautics Sustained Service Award, 2007.

Rasmussen, C., and Canfield, R. A., "The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006. Best Presentation Award.

#### **COOPER, MARTHA C.,**

Social Science Research Network (SSRN) top ten downloads of working paper, "The Intellectual Structure of Supply chain Management: A Bibliometric Approach," Francois Charvet, Martha Cooper, and John Gardner, May and June, 2007.

"Organizational Commitment and Governance for Supply Chain Success," International Journal of Physical Distribution and Logistics Management. The article was highly commended in the 2007 Emerald Literature Network Awards for Excellence – Outstanding Paper Competition.

Bernard J. La Londe Best Paper in the Journal of Business Logistics, 2007.

#### **DECKRO, RICHARD F.,**

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

#### **GOLTZ, MARK N.,**

Affiliate Societies Council of Dayton Outstanding Engineers and Scientists Education Award, 2007.

#### **HALL, SHANE N., Maj,**

Young Researcher, Institute for Operations Research and the Management Sciences, 2007.

#### **HAVRILLA, MICHAEL J.,**

Best student paper award, 2nd place, to J. Stewart at the Antenna Measurements Technique Association Conference, Oct 2006.

#### **KHAROUFEH, JEFFREY P.,**

Best Paper Award in Operations Research Track, Industrial Engineering Research Conference, 2007.

Best in Working Group: Space Topics, Satellite payloads for inclusion on a satellite bus. Presented at the Air Force Operations Research Symposium, Albuquerque, NM, October 17-20, 2006.

Nominated for a Presidential Early Career Award in Science and Engineering (PECASE), Air Force Office of Scientific Research, 2006.

**KURKOWSKI, STUART H., Maj,**

Nominated to the HKN Honor Society, November 2006.

**MARTIN, RICHARD K.,**

HKN (Eta Kappa Nu, Delta Xi Chapter) Instructor of the Year, March 2007.

**MOORE, JAMES T.,**

“Solving the Theater Distribution Problem with Tabu Search”, Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007 selected as best paper in Composite Group D and nominated for Barchi Prize.

**OGDEN, JEFFREY A.,**

“Organizational Commitment and Governance for Supply Chain Success,” International Journal of Physical Distribution and Logistics Management. The article was highly commended in the 2007 Emerald Literati Network Awards for Excellence – Outstanding Paper Competition.

**PALAZOTTO, ANTHONY N.,**

Larson, R., and Palazotto, A., “Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading”, Best Paper Award presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

**PERRY, MARCUS B.,**

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

**RAINES, RICHARD A.,**

Colonel Charles A. Stone Award, Wright Memorial Chapter Air Force Association for personal leadership in the advancement of the Air Force Institute of Technology mission, September 2007.

The Kittyhawk Chapter of the Association of Old Crows, Information Operations Award winner—for significant contributions in development of information technology programs or related doctrine or tactics, or in the application of information operations; 2007 AFIT, AU, AETC Nominee for the Secretary of the Air Force Harold Brown Award—for significant achievement in research and development.

**RAQUET, JOHN F.,**

US Air Force John L. McLucas Basic Research Award (Honorable Mention), 2007.

Colonel Charles A. Stone Award for personal leadership in the advancement of the Air Force Institute of Technology mission, 2006.

**RUGGLES-WRENN, MARINA B.,**

Col. Gage H. Crocker Outstanding Professor Award, 2007.

The American Ceramic Society, Certificate of Recognition and Appreciation, 2006.

ASME International, Pressure Vessel and Piping Division, Certificate of Appreciation, 2006.

**SAVILLE, MICHAEL A., Maj,**

Promoted to Full Member Sigma Xi, November 2006.

**WILLIAMS, PAUL D., Maj,**

AFIT Teacher of the Year – 2007 Leslie M. Norton Award Winner – Student award for the faculty member who demonstrates the highest standards of excellence in and out the classroom. #1/162 EN Professors.

**ZALEWSKI, DANIEL J., Col,**

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

**2.3.2. STUDENTS**

**AFTANAS, JASON, Capt,**

Project Management Institute Thesis Award, March 2007.

**ARTELLI, MICHAEL, Maj,**

MORS Best Working Group Paper, WG 8, Information Operations/Information Warfare, 2007.

**BARTON, RICHARD J., Capt,**

Association of Old Crows (AOC), Electronic Defense Academic Research Award, March 2007.

**COHEE, BRANNEN C., Maj,**

Mervin E. Gross Award, June 2007.

**CORDEIRO, JAMES, Maj,**

Best Paper Award in Operations Research Track, Industrial Engineering Research Conference, 2007.

**FENSTERER, GERALD, 1Lt,**

Air Force Historical Foundation Award, March 2007.

**FRANZ, TIMOTHY P., Maj,**

Air Force Association, Lt Edwin E. Aldrin Award, March 2007.

Mervin E. Gross Award, March 2007.

**GEFFRE, JENNIFER, 1Lt,**

The Military Operations Research Society Award, March 2007.

**GIMELSHTYN, MAXIM, Capt,**

The MASINT Committee Outstanding Thesis Award, March 2007.

**JACKSON, WILLIAM, SMSgt,**

The Secretary James G. Roche Award, March 2007.

**KOO, ROBERT, 1Lt,**

“Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery”, 2007  
Air Force Institute of Technology Commandant’s Award, March 2007.

**LARSON, R.,**

Larson, R., and Palazotto, A., “ Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading”, presented at the 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007. Best Paper Award.

**MICHALSKI, SYDNEY, Capt,**

International Society of Logistics’ 2007 Jerome G. Peppers Outstanding Student Award, March 2007.

**MONTMINY, DAVID P., Capt,**

The National Defense Industrial Association (NDIA), Louis F. Polk Award, March 2007.

**MOTT, STEPHEN D., 2Lt,**

Armed Forces Communications-Electronics Association (AFCEA) Command, Control, Communications, Computers, and Intelligence (C4I) Research Excellence Award Winner, March 2007.

**OLIVER, BRAD, Maj,**

“Optimizing the Undergraduate Pilot Training Scheduling Process”, The Military Operations Research Society Award, June 2007.

**RASMUSSEN, C.,**

Rasmussen, C., and Canfield, R. A., “The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems,” 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, OH. October 30, 2006. Best Presentation Award.

**SEYBA, JASON R., 2Lt,**

Armed Forces Communications-Electronics Association (AFCEA) Command, Control, Communications, Computers and Intelligence (C4I) Research Excellence Award Winner, June 2007.

**SILVA, RYAN J., 2Lt,**

Association of Old Crows (AOC), Information Security/Information Operations Academic Research Excellence Award, March 2007.

**SPINELLI, CHRISTOPHER, Capt,**

Institute of Navigation’s Research Excellence Award, March 2007

### 3. RESEARCH STATISTICS

#### 3.1. RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master's thesis and doctoral dissertation project during FY 2007 to determine the project's contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 3.1. The data in this table are based on 73 questionnaires returned out of the 292 questionnaires mailed.

Table 3.1: Sponsor Assessment of AFIT Research

| QUESTION                                                                                                                      | EN                             |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Did this research contribute to a current Air Force/DoD project? (Yes answers)                                                | 99%                            |
| The thesis work was:<br>Highly significant<br>Significant<br>Slightly significant<br>Not significant                          | 30%<br>57%<br>12%<br>1%        |
| Average man-years of effort saved by the sponsors.                                                                            | .88                            |
| Average cost avoided per thesis/dissertation by the sponsors.                                                                 | \$122,929                      |
| Total cost avoided for all theses and dissertations sponsored (estimated).                                                    | \$31 M                         |
| Rank of respondents<br>Colonel (DR IV/GM-15)<br>Lt Col (DR-III/GM-14)<br>Major (DR-II/GM-13)<br>Captain (DR-I/GS-12)<br>Other | 25%<br>40%<br>16%<br>4%<br>15% |



## RESEARCH ASSESSMENT QUESTIONNAIRE

**TO:**

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author:            Designator:

Faculty Advisor:

Date of Graduation:

Please help us determine the value and contribution of this research to your organization's mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization?    Y / N
2. Would you have completed this work if AFIT had not done it?            Y / N
3. Regardless of your answers above, how would you rate this work?    Highly significant  
                                                                                                 Significant  
                                                                                                 Slightly significant  
                                                                                                 No significance
4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. Man-Years \_\_\_\_\_ \$ \_\_\_\_\_

*Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.*

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 Hobson Way, Wright-Patterson AFB OH 45433-7765, or fax it to 937-656-7139 (DSN 986-7139), or just e-mail your answers (only) to 1 to 5 to [research@afit.edu](mailto:research@afit.edu)

If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

\_\_\_\_\_  
Name of Evaluator            Office Symbol

\_\_\_\_\_  
Grade/Rank of Evaluator

### 3.2. RESEARCH AND CONSULTING OUTPUT MEASURES

There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These indicators include the number and quality of technical publications accepted by the editors of journals; the number of presentations accepted for regional, national and international conferences; the number of research projects conducted; the number of consultations performed for Air Force and DoD customers; and finally, the number of student graduate research papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY07, these output measures are shown in Table 3.2.

Table 3.2: Faculty Research and Sponsored Programs Output by Graduate School Department

|                                      | Graduate School (EN) Total | Graduate School by Department |                             |                           |                            |                            |                           |
|--------------------------------------|----------------------------|-------------------------------|-----------------------------|---------------------------|----------------------------|----------------------------|---------------------------|
|                                      |                            | Math & Stats (ENC)            | Electrical & Comp Eng (ENG) | Engineering Physics (ENP) | Operational Sciences (ENS) | Sys & Eng Management (ENV) | Aeronautics & Astro (ENY) |
| Number of Faculty (FTE)              | 136                        | 16                            | 36                          | 19                        | 20                         | 23                         | 22                        |
| Refereed Publications                | 207                        | 25                            | 64                          | 19                        | 30                         | 24                         | 45                        |
| Refereed Presentations               | 263                        | 8                             | 143                         | 24                        | 59                         | 20                         | 9                         |
| Other Presentations and Publications | 267                        | 31                            | 71                          | 41                        | 11                         | 35                         | 78                        |
| Sponsor Funded Projects              | 171                        | 4                             | 57                          | 36                        | 16                         | 11                         | 47                        |
| Substantial Consultations            | 76                         | 5                             | 30                          | 11                        | 22                         | 8                          | 0                         |
| Books                                | 5                          | 0                             | 1                           | 0                         | 1                          | 2                          | 1                         |
| Chapters of Books                    | 5                          | 0                             | 3                           | 0                         | 0                          | 2                          | 0                         |
| Patents                              | 1                          | 0                             | 1                           | 0                         | 0                          | 0                          | 0                         |
| Doctoral Dissertations Advised       | 21                         | 0                             | 9                           | 5                         | 3                          | 0                          | 4                         |
| Master's Theses Advised              | 298                        | 0                             | 71                          | 19                        | 53                         | 56                         | 99                        |
| Graduate Research Papers Advised     | 66                         | 0                             | 9                           | 0                         | 28                         | 29                         | 0                         |

FTE: Full-time equivalent

### 3.3. RESEARCH AND CONSULTING SPONSORSHIP

As part of an Air Force institution, the faculty members of the Air Force Institute of Technology focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 82% of technical, and 74% of all theses and dissertations listed in Table 3.2 are externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DoD units. The data are summarized in Table 3.3 and Figure 3.1.

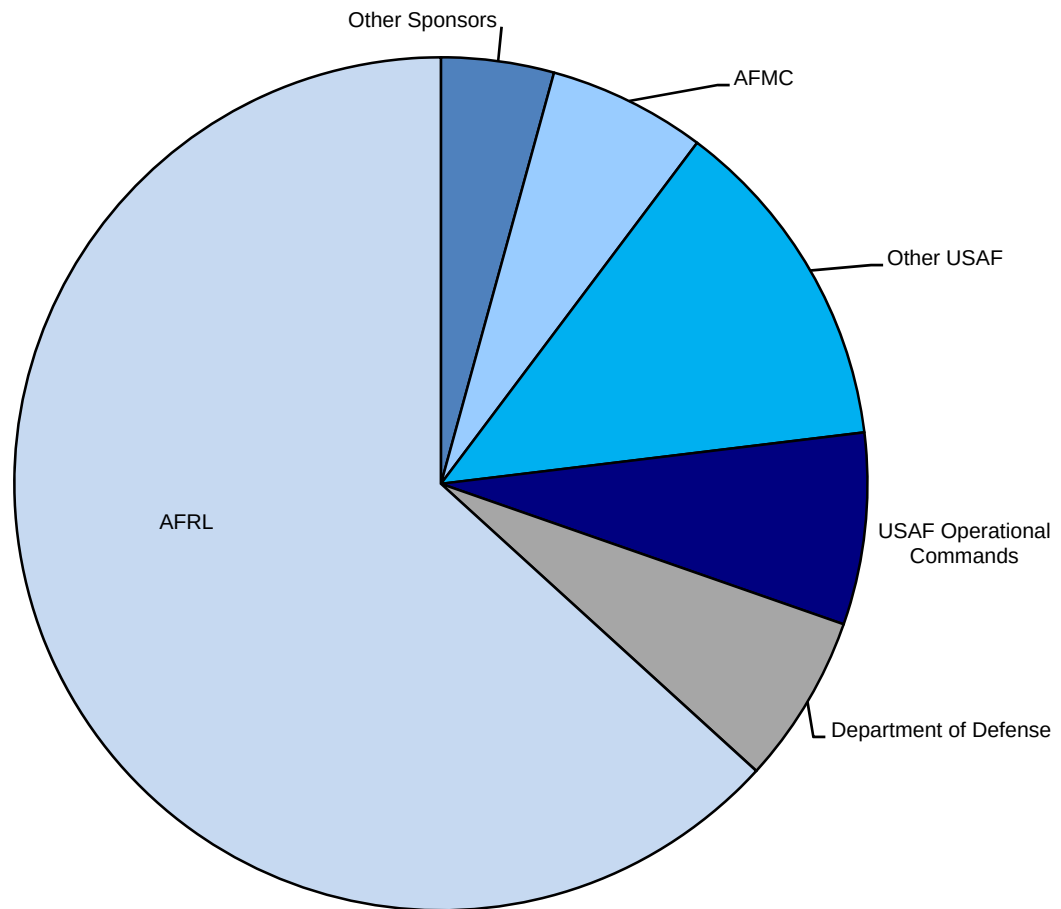


Figure 3.1: Sponsors of AFIT Theses and Dissertations

Table 3.3: AFIT External Sponsorship by Organization

| SPONSOR ORGANIZATION                               | PhD<br>Dissertations | Master's<br>Theses | Graduate<br>Research Papers | Funded<br>Projects | Substantial<br>Consultations |
|----------------------------------------------------|----------------------|--------------------|-----------------------------|--------------------|------------------------------|
| HQ UNITED STATES AIR FORCE                         |                      | 5                  | 9                           | 1                  |                              |
| OFFICE OF THE SECRETARY OF THE AIR FORCE           | 2                    | 6                  | 6                           | 11                 | 1                            |
| AIR EDUCATION AND TRAINING COMMAND                 |                      | 2                  | 1                           | 1                  |                              |
| 19 <sup>th</sup> Air Force                         |                      |                    | 1                           |                    |                              |
| AIR COMBAT COMMAND                                 |                      | 2                  | 2                           | 6                  | 2                            |
| 8 <sup>th</sup> Air Force                          |                      | 3                  | 1                           |                    | 1                            |
| National Air and Space Intelligence Center         | 2                    | 5                  | 1                           | 7                  | 5                            |
| AIR FORCE MATERIEL COMMAND                         |                      | 9                  | 4                           |                    |                              |
| Aeronautical Systems Center                        |                      | 5                  | 1                           |                    | 3                            |
| Air Force Research Laboratory (AFRL)               |                      |                    | 3                           |                    |                              |
| Air Force Office of Scientific Research (AFOSR)    | 2                    | 18                 |                             | 27                 | 3                            |
| Air Vehicles Directorate (VA)                      | 1                    | 25                 |                             | 21                 | 2                            |
| Directed Energy Directorate (DE)                   | 3                    | 3                  |                             | 9                  |                              |
| Human Effectiveness Directorate (HE)               |                      | 5                  |                             | 6                  |                              |
| Information Directorate (IF)                       | 1                    | 5                  |                             | 7                  | 1                            |
| Materials & Manufacturing Directorate (ML)         |                      | 8                  |                             | 6                  | 1                            |
| Munitions Directorate (MN)                         |                      | 5                  |                             | 3                  | 3                            |
| Propulsion Directorate (PR)                        |                      | 16                 |                             | 5                  |                              |
| Requirements Directorate (XR)                      |                      | 1                  |                             |                    |                              |
| Sensors Directorate (SN)                           | 5                    | 35                 |                             | 23                 | 9                            |
| Space Vehicles Directorate (VS)                    | 2                    | 13                 |                             | 2                  |                              |
| AIR FORCE SPACE COMMAND                            |                      | 2                  |                             |                    |                              |
| AIR MOBILITY COMMAND                               |                      | 1                  | 11                          |                    | 3                            |
| US AIR FORCE OPERATING AGENCIES                    |                      |                    |                             |                    |                              |
| Air Force Center for Environmental Excellence      |                      | 4                  |                             |                    |                              |
| Air Force Civil Engineer Support Agency            |                      | 4                  |                             |                    |                              |
| Air Force Communications Agency                    |                      | 4                  |                             | 1                  | 1                            |
| Air Force Cost Analysis Agency                     |                      | 1                  |                             | 1                  |                              |
| Air Force Geographical Info Systems Support Center |                      | 1                  |                             |                    |                              |
| Air Force Test Pilot School                        |                      | 1                  | 1                           |                    |                              |
| Air Force Technical Application Center             | 1                    | 1                  |                             | 1                  | 2                            |
| DEPARTMENT OF DEFENSE                              |                      |                    | 1                           | 7                  | 6                            |
| Defense Logistics Agency                           |                      | 1                  |                             |                    |                              |
| Defense Threat Reduction Agency                    |                      | 5                  |                             | 1                  | 2                            |
| High Energy Laser Joint Technology Office          |                      | 1                  |                             | 7                  |                              |
| US Office of Secretary Defense                     |                      | 1                  |                             | 1                  |                              |
| US Strategic Command                               |                      | 1                  |                             |                    |                              |
| US Transportation Command                          |                      | 1                  |                             |                    |                              |
| United States Army                                 | 1                    | 2                  |                             | 1                  | 3                            |
| United States Navy                                 |                      | 2                  |                             |                    | 2                            |
| DEPARTMENT OF ENERGY                               | 1                    | 1                  |                             |                    |                              |
| OTHER FEDERAL AGENCIES                             |                      |                    |                             |                    |                              |
| Environmental Protection Agency                    |                      | 2                  |                             | 1                  |                              |
| National Aeronautics and Space Administration      |                      | 1                  |                             |                    |                              |
| National Geospatial Intelligence Agency            |                      | 1                  |                             | 2                  |                              |
| National Parks Services                            |                      | 1                  |                             |                    |                              |
| National Security Agency                           |                      | 2                  |                             | 3                  | 4                            |
| NATIONAL SCIENCE FOUNDATION                        |                      |                    |                             | 1                  |                              |
| NATIONAL ACADEMY OF SCIENCES                       | 1                    |                    |                             |                    |                              |
| CANADIAN ROYAL MILITARY                            |                      |                    |                             |                    | 5                            |
| DAYTON AREA GRADUATE STUDIES INSTITUTE             |                      |                    |                             | 5                  |                              |
| <b>TOTALS</b>                                      | <b>22</b>            | <b>212</b>         | <b>42</b>                   | <b>162</b>         | <b>59</b>                    |

NOTE: Some student publications have multiple sponsors; See App C for Selected Acronym List

### 3.4. OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often, this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Tables 3.4 and 3.5, and Figure 3.3, summarize outside funding for FY07, and Figure 3.2 summarizes the past seven fiscal years of outside sponsored funding.

**Table 3.4 New FY07 Awards to Academic Departments & Research Centers by Type**

| Department                             | Research   |                  | Education |                  | Total      |                  |
|----------------------------------------|------------|------------------|-----------|------------------|------------|------------------|
|                                        | #          | Dollars          | #         | Dollars          | #          | Dollars          |
| Mathematics & Statistics (ENC)         | 4          | 68,979           | -         | -                | 4          | 68,979           |
| Electrical & Computer Eng (ENG)        | 52         | 2,241,268        | 5         | 1,090,018        | 57         | 3,331,286        |
| Engineering Physics (ENP)              | 34         | 2,316,659        | 3         | 548,922          | 36         | 2,865,581        |
| Research & Sponsored Programs (ENR)    | 1          | 10,201           | -         | -                | 1          | 10,201           |
| Operations Sciences (ENS)              | 16         | 388,825          | -         | -                | 16         | 388,825          |
| Systems & Eng Management (ENV)         | 11         | 644,877          | -         | -                | 11         | 644,877          |
| Aeronautical & Astronautical Eng (ENY) | 43         | 1,014,789        | 4         | 150,045          | 47         | 1,164,834        |
| <b>TOTAL</b>                           | <b>161</b> | <b>6,685,599</b> | <b>12</b> | <b>1,788,985</b> | <b>173</b> | <b>8,474,584</b> |

| Research Center                               | Research  |                  | Education |                  | Total     |                  |
|-----------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|
|                                               | #         | Dollars          | #         | Dollars          | #         | Dollars          |
| Advanced Navigation Technology Center (ANT)   | 25        | 1,140,390        | 1         | 20,160           | 26        | 1,160,550        |
| Center for Directed Energy [CDE]              | 17        | 1,353,227        | 2         | 38,922           | 19        | 1,392,149        |
| Center for Cyberspace Research (CCR)          | 9         | 390,987          | 4         | 1,069,858        | 13        | 1,460,845        |
| Center for MASINT Studies and Research [CMSR] | 5         | 357,240          | 1         | 510,000          | 6         | 867,240          |
| Center for Operational Analysis (COA)         | 12        | 343,825          | -         | -                | 12        | 343,825          |
| Center for Systems Engineering (CSE)          | 6         | 215,150          | 2         | 109,725          | 8         | 324,875          |
| Center for Space Studies & Research (CSSR)    | 2         | 97,869           | -         | -                | 2         | 97,869           |
| <b>TOTAL</b>                                  | <b>76</b> | <b>3,893,268</b> | <b>10</b> | <b>1,748,665</b> | <b>86</b> | <b>5,647,353</b> |

Notes: DoD regulations limit AFIT's charges to DoD organizations. Accounting for these nonchargeable items, the cost of our research program at a comparable civilian university would have been approximately \$15 million  
All Center funds are also included in departmental funding

**Figure 3.2: New Award History FY00-FY07**

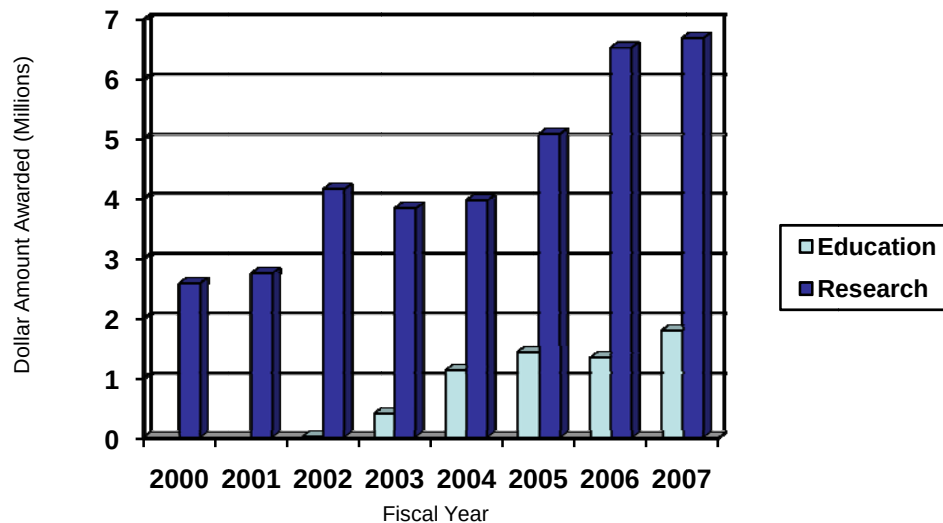


Figure 3.3: Sponsors of FY07 Funded Projects

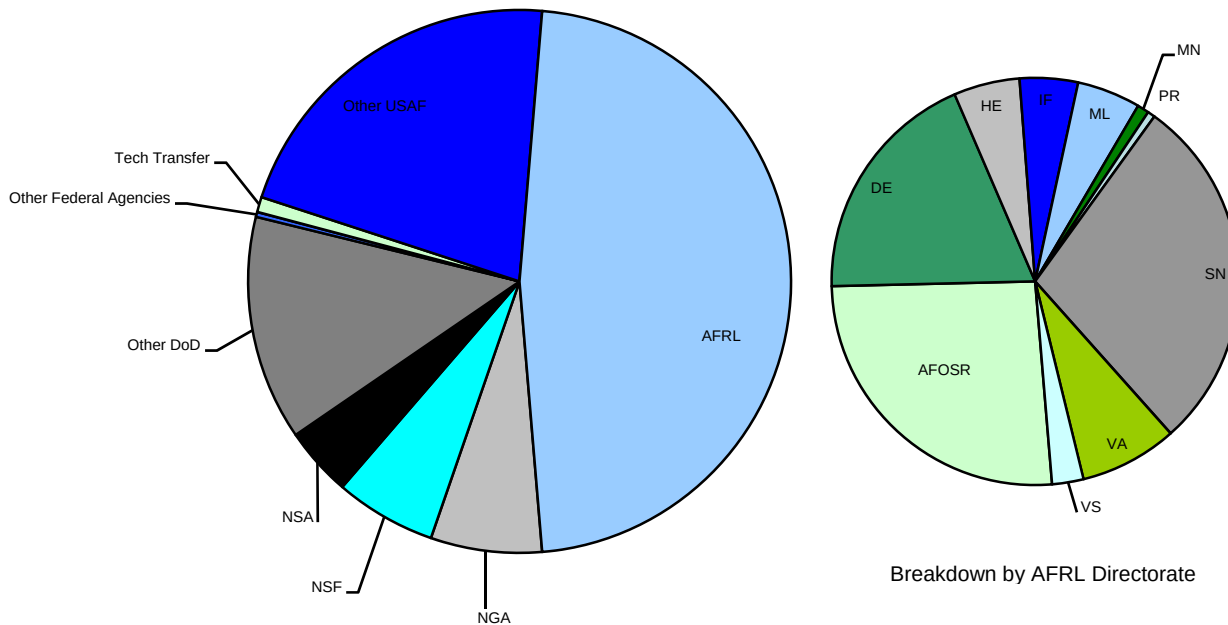


Table 3.5 New FY07 Awards to Academic Departments & Research Centers by Sponsor

| Dept.        | AFRL<br>Dollars  | Other<br>USAF<br>Dollars | Other<br>DoD<br>Dollars | NGA<br>Dollars | NSF<br>Dollars | NSA<br>Dollars | Other<br>Federal<br>Dollars | Non-<br>Federal<br>Dollars | Total<br>Dollars |
|--------------|------------------|--------------------------|-------------------------|----------------|----------------|----------------|-----------------------------|----------------------------|------------------|
| ENC          | 68,979           | -                        | -                       | -              | -              | -              | -                           | -                          | 68,979           |
| ENG          | 1,655,917        | 481,601                  | 285,450                 | 50,000         | 510,710        | 327,448        | -                           | 20,160                     | 3,331,286        |
| ENP          | 1,215,776        | 380,000                  | 759,805                 | 510,000        | -              | -              | -                           | -                          | 2,865,581        |
| ENR          | 10,201           | -                        | -                       | -              | -              | -              | -                           | -                          | 10,201           |
| ENS          | 271,825          | 97,000                   | -                       | -              | -              | 20,000         | -                           | -                          | 388,825          |
| ENV          | 120,000          | 421,328                  | 78,800                  | -              | -              | -              | 24,750                      | -                          | 644,878          |
| ENY          | 676,506          | 422,567                  | 9,444                   | -              | -              | -              | -                           | 56,317                     | 1,164,834        |
| <b>TOTAL</b> | <b>4,019,204</b> | <b>1,802,496</b>         | <b>1,133,499</b>        | <b>560,000</b> | <b>510,710</b> | <b>347,448</b> | <b>24,750</b>               | <b>76,477</b>              | <b>8,474,584</b> |

| Research<br>Center | Dollars          | Dollars        | Dollars        | Dollars        | Dollars        | Dollars        | Dollars  | Dollars       | Dollars          |
|--------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------|---------------|------------------|
| ANT                | 869,679          | 101,961        | 118,750        | 50,000         | -              | -              | -        | 20,160        | 1,160,550        |
| CCR                | 355,000          | 100,987        | 166,700        | -              | 510,710        | 327,448        | -        | -             | 1,460,845        |
| CDE                | 889,632          | -              | 502,517        | -              | -              | -              | -        | -             | 1,392,149        |
| CMSR               | 132,240          | 225,000        | -              | 510,000        | -              | -              | -        | -             | 867,240          |
| COA                | 246,825          | 97,000         | -              | -              | -              | -              | -        | -             | 343,825          |
| CSE                | 84,000           | 240,875        | -              | -              | -              | -              | -        | -             | 324,875          |
| CSSR               | -                | 97,869         | -              | -              | -              | -              | -        | -             | 97,869           |
| <b>TOTAL</b>       | <b>2,577,376</b> | <b>863,692</b> | <b>787,967</b> | <b>560,000</b> | <b>510,710</b> | <b>327,448</b> | <b>-</b> | <b>20,160</b> | <b>5,647,353</b> |

Note: All Center funds are also included in departmental funding

## **4. SPONSORSHIP OF STUDENT RESEARCH**

### **4.1. DOCTORAL DISSERTATIONS**

#### **4.1.1. OFFICE OF THE SECRETARY OF THE AIR FORCE**

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*. AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

SMETEK, TIMOTHY E., *Hyperspectral Imagery Target Detection Using Improved Anomaly Detection and Signature Matching Methods*. AFIT/DS/ENS/07-07. Faculty Advisor: Dr. Kenneth W. Bauer. Sponsor: SAF.

#### **4.1.2. AIR COMBAT COMMAND**

##### **NATIONAL AIR AND SPACE INTELLIGENCE CENTER**

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*. AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

#### **4.1.3. AIR EDUCATION AND TRAINING COMMAND**

##### **AIR FORCE INSTITUTE OF TECHNOLOGY**

Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

DREHER, PETER, A., *Dynamic Response of a Collidant Impacting a Low Pressure Airbag*. AFIT/DS/ENY/07-09. Faculty Advisor: Dr. Robert A. Canfield. Sponsor: N/A.

NGUYEN, THAO Q., *Efficient GPS Position Determination Algorithms*. AFIT/DS/ENG/07-09. Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

#### **4.1.4. AIR FORCE TECHNICAL APPLICATIONS CENTER**

DISHAW, JAMES R., *Time Dependent Discrete Ordinates Neutron Transport Using Distribution Iteration in XYZ Geometry*. AFIT/DS/ENP/07-S01. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: AFTAC.

#### **4.1.5. AIR FORCE RESEARCH LABORATORY**

##### **AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH**

ADAMSON, PAUL E., *A General Quantum Mechanical Method to Predict Positron Spectroscopy*. AFIT/DS/ENP/07-04. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFOSR/NL.

CORDEIRO JR., JAMES D., *Unreliable Retrieval Queues in a Random Environment*. AFIT/DS/ENS/07-03. Faculty Advisor: Dr. Jeffrey P. Kharoufeh. Sponsor: AFOSR.

##### **AFRL: AIR VEHICLES DIRECTORATE**

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

#### **AFRL: DIRECTED ENERGY DIRECTORATE**

JOHNSON, PETER M., *Phase Diversity and Polarization Augmented Techniques for Active Imaging*. AFIT/DS/ENG/07-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/DESA.

STRONG, DAVID M., *Polarimeter Blind Deconvolution Using Image Diversity*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/DESA.

TERRY, NATHAN B., *Raman Fiber Lasers and Amplifiers Based on Multimode Graded-Index Fibers and Their Application to Beam Cleanup*. AFIT/DS/ENP/07-02. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

#### **AFRL: INFORMATION DIRECTORATE**

MANN, CHRISTOPHER R., *Energy-Efficient Querying of Wireless Sensor Networks*. AFIT/DS/ENG/07-19. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/IFSC.

#### **AFRL: SENSORS DIRECTORATE**

EDGE, KENNETH S., *A Framework for Analyzing and Mitigating the Vulnerabilities of Complex Systems via Attack and Protection Trees*. AFIT/DS/ENG/07-13. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

FORMWALT, BYRON P., *Modeling, Simulation, and Estimation of Optical Turbulence*. AFIT/DS/ENG/07-04. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

OCHOA, EDWARD M., *Hybrid Micro-Electro-Mechanical Tunable Filter*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SNDP.

SALLBERG, SCOTT A., *Sampled-Data Kalman Filtering and Multiple Model Adaptive Estimation for Infinite-Dimensional Continuous-Time Systems*. AFIT/DS/ENG/07-08. Faculty Advisor: Dr. Peter S. Maybeck. Sponsor: AFRL/SN.

SISKANINETZ, WILLIAM J., *Bipolar Cascade Vertical-Cavity Surface-Emitting Lasers for RF Photonic Link Applications*. AFIT/DS/ENG/07-22. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/SNDP.

#### **AFRL: SPACE VEHICLES DIRECTORATE**

IRVIN JR., DAVID J., *Optimal Control Strategies for Constrained Relative Orbits*. AFIT/DS/ENY/07-03. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

JORRIS, TIMOTHY, R., *Common Aero Vehicle Autonomous Reentry Trajectory Optimization Satisfying Waypoint and No-Fly Zone Constraints*. AFIT/DS/ENY/07-04. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

#### **4.1.6. US ARMY RESEARCH DEVELOPMENT AND ENGINEERING COMAND**

SCHULZ, CHRISTOPHER S., *Rotorcraft Smoothing Via Linear Time Periodic Methods*. AFIT/DS/ENY/07-10. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: USA RDECOM.

#### **4.1.7. DEPARTMENT OF ENERGY**

BECK, ERIC V., *A Multireference Density Functional Approach to the Calculation of the Excited States of Uranium Ions*. AFIT/DS/ENP/07-01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DOE.

#### **4.1.8. THE NATIONAL ACADEMY OF SCIENCES**

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

## **4.2. MASTER'S THESES**

### **4.2.1. HQ UNITED STATES AIR FORCE**

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: HAF/A4IT.

GENTIL, KATHRINE J., *Developing Advanced Academic Degree Educational Profiles for Career Fields*. AFIT/GOR/ENS/07-08. Faculty Advisor: Maj Shane Knighton. Sponsor: HAF/A1.

HENNETTE, JAY C., *AFSO 21: A Comparison of Private Sector and Air Force Practices*. AFIT/GLM/ENV/07-09. Faculty Advisor: Dr. David Vaughan. Sponsor: HAF/A3.

JOHNSON, JOHN P., *Balanced Scorecard: Aggregating Aircraft Mission Capable Rates*. AFIT/GLM/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: HAF/A4ID.

WALKER, S. DAVID., *The Effects of Career Broadening on Leadership Development*. AFIT/GLM/ENV/07-M6. Faculty Advisor: LtCol Kent Halverson. Sponsor: HAF/A1DD.

### **4.2.2. OFFICE OF THE SECRETARY OF THE AIR FORCE**

BARBA-SORRA, VICTOR M., *Controller Design for Accurate Antenna Pointing Onboard a Spacecraft*. AFIT/GAE/ENG/07-03. Faculty Advisor: Dr. Meir Pachter. Sponsor: SAF.

BLAIR, AARON M., *Assessing Perceptions of Knowledge Management Maturity/Capabilities: A Case Study of SAF/FM*. AFIT/GIR/ENV/07-M3. Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: SAF.

CRAWFORD, BRIAN P., *Approximate Analysis of an Unreliable M/M/2 Retrial Queues*. AFIT/GOR/ENS/07-05. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

DAINTY, BENJAMIN G., *Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation*. AFIT/GSS/ENG/07-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: SAF.

KALLEMYN, BENJAMIN S., *Prioritizing Satellite Payload Selection via Optimization*. AFIT/GOR/ENS/07-14. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

WRIGHT, GARY L., *A Comparative Assessment of Knowledge Management Education Across the United States Department of Defense*. AFIT/GIR/ENV/07-M17. Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: SAF/XC.

### **4.2.3. AIR COMBAT COMMAND**

AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects*. AFIT/GEM/ENS/07-01. Faculty Advisor: Maj Shane Knighton. Sponsor: ACC/A7-2.

SIMMERS, DOUGLAS M., *Identifying Knowledge, Skill, and Ability Requirements for 33S Officers in Deployed Environments*. AFIT/GIR/ENV/07-M16. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: ACC/A600.

## **8<sup>th</sup> AIR FORCE**

CZUMAK, MICHAEL N., III, *Recommendations for a Standardized Program Management Office (PMO) Time Compliance Network Order (TCNO) Patching Process*. AFIT/GIR/ENV/07-M8. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFNOC/DET1 (8AF).

SHAW, ALFRED K., *A Model for Performing Mission Impact Analysis of Network Outages*. AFIT/GCS/ENG/07-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 8<sup>th</sup> AF/AFNOC.

SMITH, TIFFINY S., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*. AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS/CC.

## **NATIONAL AIR AND SPACE INTELLIGENCE CENTER**

CORYELL, CHRISTOPHER E., *Using Concept Maps to Efficiently Build Information Models for SAVANT*. AFIT/GCE/ENG/07-03. Faculty Advisor: LtCol Timothy J. Halloran. Sponsor: NASIC/SC.

CLAYCAMP, RYAN C., *Threat Modeling of Spacecraft Attitude Control Subsystem*. AFIT/GA/ENY/07-M04. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: NASIC/SMSV.

CRIDER, KENDRA L., *Radial Diffusion Between Coaxial Cylinders*. AFIT/GAE/ENY/07-M09. Faculty Advisor: Dr. Paul I. King. Sponsor: NASIC/ADNA.

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis*. AFIT/GOR/ENS/07-07. Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure*. AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

## **4.2.4. AIR EDUCATION AND TRAINING COMMAND**

BOYD, EDWARD K., *Professionalism in the USAF: A Comparative Analysis of Commissioned Officers with Non-Commissioned Officers*. AFIT/GIR/ENV/07-M4, Faculty Advisor: LtCol Kent C. Halverson. Sponsor: AETC.

HEATH VAN HORN, MATHEW J., *An Analysis of the Balance of Management, Technical and Leadership Progression through the Three USAF Officer Tiers*. AFIT/GIR/ENV/07-M10. Faculty Advisor: Dr. Alan Heminger. Sponsor: SOC/DEO/SOS (AETC).

## **AIR FORCE INSTITUTE OF TECHNOLOGY**

Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

BAILEY, LANDON C., *Refinement of an Instrument to Assess Readiness for Knowledge Management*. AFIT/GIR/ENV/07-M2, Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

BALDWIN, JASON L., *Optimal Control of a Circular Satellite Formation Subject to Gravitational Perturbations*. AFIT/GA/ENY/07-M02. Faculty Advisor: LtCol Nathan Titus. Sponsor: N/A.

BELLUCCI, JOSEPH P., *Improved Hyperspectral Image Testing Using Synthetic Imagery and Factorial Designed Experiments*. AFIT/GOR/ENS/07-01. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

BITTLE, NICOLE, M., *Estimating the Aerodynamic and Heating Properties of an Unknown Reentry Vehicle Using Least Squares Filtering*. AFIT/GSS/ENY/07-M01. LtCol Kerry D. Hicks. Sponsor: N/A.

BOND, MATTHEW S., JAMES A. RODRIGUEZ and HIEU T. NGUYEN. *A Systems Engineering Process for an Integrated Structural Health Monitoring System*. AFIT/GSE/ENY/07M-02. Faculty Advisor: Dr. Som R. Soni. Sponsor: N/A.

BROAS, TINA M., *The Effect of Downsizing on Attrition Rates in the Department of Defense (DoD)*. AFIT/GCA/ENV/07-M1, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BRUNNER, ABRAHAM F., *Spacecraft Proximity Operations Used to Estimate the Dynamical & Physical Properties of a Resident Space Object*. AFIT/GA/ENY/07-M03. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

BRYANT, MICHAEL, *Forecasting the KC-135 Cost Per Flying Hour: A Panel Data Analysis*. AFIT/GCA/ENV/07-M2, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

BURRELL, DERREN P., *An Analysis of the Military Retirement System: How Does Retirement Return Influence Retention?* AFIT/GCA/ENV/07-M3. Faculty Advisor: LtCol Jeffrey S. Smith. Sponsor: N/A.

BYNUM, ARNOLD R., *An Analysis of Delivering Persistent Real Time Imagery Intelligence to Combatant Commanders*. AFIT/GLM/ENV/07-M1. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

CATES, MICHAEL S., *Corporate Entrepreneurship Assessment Instrument (CEAI): Refinement and Validation of a Survey Measure*. AFIT/GIR/ENV/07-M7. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

CAULK, RYAN F., *Outlier Detection in Hyperspectral Imaging Using Closest Distance to Center with Ellipsoidal Multivariate Trimming*. AFIT/GOR/ENS/07-02. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

CAVALLARO, KRISTEN L., *Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization*. AFIT/GOR/ENS/07-03. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CHO, NAM-SUK., *Critical Infrastructure Rebuild Prioritization Using Simulation Optimization*. AFIT/GOR/ENS/07-04. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CHOI, PETER M., *The Effects of Social Network Centrality on Group Satisfaction*. AFIT/GEM/ENV/07-M2. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

COATES, GREGORY M., *Collaborative, Trust-Based Security Mechanisms for a National Utility Intranet*. AFIT/GIA/ENG/07-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: N/A.

COLACICCO, JOSEPH M., *Analysis of Army Transformation and the Effects on Customer Ordering Behavior*. AFIT/GLM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

COLLUP, JUSTIN W., *Forecasting Demand for Civilian Pilots: A Cost Savings Approach to Managing Air Force Pilot Resources*. AFIT/GCA/ENV/07-M4. Faculty Advisor: LtCol Jeffery S. Smith. Sponsor: N/A.

CROUSE, JOSHUA D., *Development of Cursor-on-Target Control for Semi-Autonomous Unmanned Aircraft Systems*. AFITGAE/ENY/07-J04. Research Advisor: Maj Paul Blue. Sponsor: N/A.

CROW, SHIRLEY D., *An Evaluation of Organizational and Experience Factors Affecting the Perceived Transfer of U.S. Air Force Basic Combat Skills Training*. AFIT/GLM/ENV/07-M2. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

DENISON, NICHOLAS A., *Automated Carrier Landing of an Unmanned Combat Aerial Vehicle Using Dynamic Inversion*. AFIT/GAE/ENY/07-J06. Faculty Advisor: Maj Christopher Shearer. Sponsor: N/A.

DEVUONO, AMANDA J., *Flight Dynamic Response of HALE Aircraft to KC-135 Flowfield*. AFIT/GAE/ENY/07-S06. Faculty Advisor: Maj Christopher Shearer. Sponsor: N/A.

DRIES, ERIK J., *Scaling Ant Colony Optimization with Hierarchical Reinforcement Learning Partitioning*. AFIT/GCS/ENG/07-16. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A.

DUNCAN, DAVID J., *Rapid Runway Repair (RRR): an Optimization for Minimum Operating Strip (MOS) Selection*. AFIT/GEM/ENV/07-M4. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

ELKINS, JOSEPH S., *Internal Versus External Acquisition for Small Weapons Systems*. AFIT/GLM/ENV/07-M3. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

ELLIS, TROY R., *Airborne Laser Tracking Signal Degradation From Wave Optics Simulation of Propagation Through Computational Fluid Dynamics Models of Aero-Optics*. AFIT/GEO/ENG/07-02. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

ETTER, ROBERT B., *CFD Investigation of Effect of Depth to Diameter Ratio on Dimple Flow*. AFIT/GAE/ENY/07-J07. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

FOREMAN, JAMES D., *Predicting the Effect of Longitudinal Variables on Cost and Schedule Performance*. AFIT/GIR/ENC/07M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: N/A.

FRAM, BRYAN JOSHUA, *An Analysis of Operationally Responsive Space in Terms of Cost and Utility With the Use of a Hybrid Launch Vehicle*. AFIT/GA/ENY/07-M06. Faculty Advisor: Dr. Michael Heil. Sponsor: N/A.

FRANZ, TIMOTHY P., *IO Foundations to Cyberspace Operations*. AFIT/GIA/ENG/07-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

GABRIELE, THOMAS PAUL., *Active Control of a Thin Deformable Inplane Actuated Mirror*. AFIT/GA/ENY/07-M07. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GIACOMAZZI, MICHAEL P., II, *An Analysis of the Impact of Defense Acquisition Reforms and External Factors on Schedule Growth of Defense Weapon Systems*. AFIT/GCA/ENV/07-M6. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

GIMELSHTEYN, MAXIM, *Classifying Commercial Receiver Emissions Using Fisher Discriminant Analysis*. AFIT/GE/ENG/07-08. Faculty Advisor: Dr. Michael A. Temple. Sponsor: N/A.

GORSUCH, ROGER L., *Analysis of Routing Worm Propagation on an IPv4 Network*. AFIT/GCS/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

GUETTLER, DAVID B., *Satellite Attitude Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HAJOVSKY, BLAKE B., *Satellite Formation Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M11. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HARRELL, RYAN M., *A Multivariate Magnitude Robust Control Chart for Mean Shift Detection and Change Point Estimation*. AFIT/GOR/ENS/07-09. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

HARTLAGE, ROBERT B., *An Efficient Metaheuristic for Dynamic Network Design and Message Routing*. AFIT/GOR/ENS/07-10. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

HERBRANSON, TRAVIS J., *Isolating Key Players in Clandestine Networks*. AFIT/GOR/ENS/07-11. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

HINES, MICHAEL S., *Fuel Estimation Using Dynamic Response*. AFIT/GA/ENY/07-M12. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

HUDSON, SEAN W., *Identifying Bot Infections on Air Force Networks using Advanced Methodologies*. AFIT/GCE/ENG/07-05. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: N/A.

HYLAND, MATTHEW T., *Performance Evaluation of Ad-Hoc Routing Protocols in a Swarm of Autonomous Unmanned Aerial Vehicles*. AFIT/GCS/ENG/07-07. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.

JAMES, STEVEN A., *A Small Scale Imaging Platform for Algorithm Performance Evaluation*. AFIT/GAE/ENG/07-01. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

JOHNSON, MATTHEW T., *Thermally Activated, Variable Blazed Grating for Coherent Beam Steering*. AFIT/GEO/ENG/07-04. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

KERNS, DAVID A., *Automatic Target Recognition User Interface Tool*. AFIT/GOR/ENS/07-15. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

KOO, ROBERT, *Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery*. AFIT/GOR/ENS/07-16. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

LOW, BRIAN R., *Mapping Change Management: A Co-citation Analysis*. AFIT/GEM/ENV/07-M8. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: N/A.

LUNAS, FREDERIC W., *Triangulating Social Capital Measurement for Turnover Research: Applications to the U.S. Military*. AFIT/GIR/ENV/07-M11. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

MARSHALL, TOMMY V., II, *A Comparative Assessment of Knowledge Management Leadership Approaches within the Department of Defense*. AFIT/GIR/ENV/07-M12. Faculty Advisor: LtCol Summer E. Bartczak. Sponsor: N/A.

MCGAHA, CHRISTOPHER C., *Filtered Rayleigh Scattering Measurements in a Buoyant Flowfield*. AFIT/GAE/ENY/07-M18. Faculty Advisor: Dr. Mark Reeder. Sponsor: N/A.

MILLER, Z. R., *Final Development, Testing, and Flight Preparation of the Rigidizable Inflatable Get-Away-Special (RIGEX)*. AFIT/GAE/ENY/07-J14. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

MITCHELL, ROBERT H., JR., *Real Options as a Strategic Management Framework: A Case Study of the Operationally Responsive Space Initiative*. AFIT/GRD/ENV/07-M2. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

MOON, HYOUNG-ILL, *South Korea's Current Position on FMS*. FIT/GLM/ENV/07-M5. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

MORRIS JR., GERALD W., *The Chaos of Katrina: A Nonlinear Analysis of Federal Logistics Support During Hurricane Katrina Relief Operations*. AFIT/GLM/ENS/07-10. Faculty Advisor: LtCol Bradley Anderson. Sponsor: N/A.

NGUYEN, HIEU T., see BOND, MATTHEW S.

NORSKY, PETER C., *A Technology Investment Value Model For The Air Force Research Laboratory Focused Long Term Challenges*. AFIT/GOR/ENS/07-18. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

OWENS, JEREMY J., *Final Assembly, Testing and Processing of the Rigidizable Inflatable Get-Away-Special Experiment (RIGEX) for Spaceflight Qualification*. AFIT/GA/ENY/07-S02. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

O'NEAL, B. D., *Development and Testing of the Rigidizable Inflatable Get-Away-Special Experiment*. AFIT/GAE/ENY/07-J16. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

PARK, SEUNG-BAE., *A Multi-Objective Decision-Making Model for Resources Allocation in Humanitarian Relief*. AFIT/GOR/ENS/07-20. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

PARRISH, MICHAEL R., *A Meta-Analysis of Questionnaire Response Rates in Military Samples*. AFIT/GRD/ENV/07-M4. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

PATRASCU, ADRIAN C., *Optimizing Distributed Sensor Placement for Border Patrol Interdiction Using Microsoft Excel*. AFIT/GOR/ENS/07-21. Faculty Advisor: Dr. James Moore. Sponsor: N/A.

PETERSON, FREDERICK W., *Predicting Performance Using Cohesion and Social Network Density: A Comparative Analysis*. AFIT/GEM/ENV/07-M11. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.

REYES, KEVIN B., *HSI: Outlier Detection Methods in Hyperspectral Imagery*. AFIT/GOR/ENS/07-22. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

ROCHE, JAMES F., *Performance of Airborne Tactical High Energy Laser Arrays With Non-Redundant Autocorrelations Through Turbulence*. AFIT/GAP/ENG/07-01. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

RODRIGUEZ, JAMES A., see BOND, MATTHEW S.

ROEHL, JOHN M., *Internet Protocol Geolocation: Development of a Delay-Based Hybrid Methodology for Locating the Geographic Location of a Network Node*. AFIT/GIR/ENV/07-M15. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.

RUTER, PHILIP E., II, *Cost Growth in Weapons Systems: Re-Examining Rubber Baselines and Economic Factors*. AFIT/GCA/ENV/07-M9. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

SALAVERRY JUAN A., *Predicting Argentine Jet Fuel Prices*. AFIT/GLM/ENC/07M-01. Faculty Advisor: Dr. Edward White, III. Sponsor: N/A.

SOLFELT, D. A., *CFD Analysis of a T-38 Wing Fence*. AFIT/GAE/ENY/07-J19. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

SPRINGS, ANITA C., *Assessing the Impact of the Work Environment on Training Transfer: An Investigation of the Air Force Acquisition Management Course*. AFIT/GIR/ENV/07-J4. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

STELLY, JOHN M., *Price Vs. Performance: The Value Of Next Generation Fighter Aircraft*. AFIT/ENV/GCA/07-M10. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

SUGRUE, KIMBERLY, A., *Optimal Orbital Coverage of Theater Operations and Targets*. AFIT/GA/ENY/07-M17. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

- TAITANO, YURI P., *Hyperspectral Imagery Target Detection Using the Iterative RX Detector*. AFIT/GOR/ENS/07-25. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.
- THEONY, CLIFFORD M., *The Net Effects of Social Network Density and Organizational Citizenship Behavior on Performance*. AFIT/GEM/ENV/07-M14. Faculty Advisor: LtCol Kent C. Halverson. Sponsor: N/A.
- TONEY, ROBERT P., *Management Versus Non-Management Knowledge Transfer From Training To Real Work Environments: A Meta-Analysis*. AFIT/GEM/ENV/07-M15. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.
- TOWER, PAUL K., *An Analysis of Robust Workforce Scheduling Models for a Nurse Rostering Problem*. AFIT/GLM/ENS/07-12. Faculty Advisor: Maj Shane Knighton. Sponsor: N/A.
- TY, ANTHONY R., *Aerosolization and TaqMan PCR Detection/Quantification of Bradyrhizobium japonicum USDA 110 as a Biowarfare Simulant*. AFIT/GES/ENV/07-M4. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.
- WALDRON, JAMES M., *Characterization of Chlorinated Ethene Degradation in a Vertical Flow Constructed Wetland*. AFIT/GEM/ENV/07-M17. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.
- WARD, CHARLES W., *Commander and User Perceptions of the Army's ITV Architecture*. AFIT/GLM/ENS/07-13. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.
- WILKEN, BRIAN A., *Change-Point Methods for Overdispersed Count Data*. FIT/GOR/ENS/07-26. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.
- WILLIAMS, JASON P., *Robustness of Multiple Clustering Algorithms on Hyperspectral Images*. AFIT/GOR/ENS/07-27. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.
- WOLFF, JASON B., *The Perceived Effectiveness of Mentoring by Company Grade Officers in the United States Air Force*. AFIT/GLM/ENV/07-M7. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

#### **4.2.5. AIR FORCE MATERIEL COMMAND**

- BERG, BRYAN, K., *The Application of System Engineering Techniques to the Integration of a Digital Nuclear Weapon Onto The F-15*. AFIT/GSE/ENY/07-M05. Faculty Advisor: Maj Joerg Walter. Sponsor: 912 AESG/VA.
- BECKLY, CHRISTOPHER M., *Sizing Mobility Readiness Spares Packages for Today's Warfighting Units*. AFIT/GLM/ENS/07-01. Faculty Advisor: LtCol Bradley Anderson. Sponsor: AFMC/A8S.
- CAIRO, LUIS N., *An Analysis of the Deployment of System Oriented Architecture Environments in Air Force Combined Air Operations Centers*. AFIT/GIR/ENV/07-M6. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: 46TS/OGEA.
- CASPERS, MATTHEW S., *CFD Investigation of Flow Past Idealized Engine Nacelle Clutter*. AFIT/GAE/ENY/07-M08. Faculty Advisor: LtCol Raymond C. Maple. Sponsor: 46 TW OG.
- FOWLER, JOSHUA D., *Impact of Window Selection on Zero-Doppler Clutter Estimation and Subtraction for ISAR Applications*. AFIT/GE/ENG/07-07. Faculty Advisor: Dr. Michael A. Temple. Sponsor: 46 TS/OGEE.

GEMAS, DAVID L., *A Systems Engineering Approach to Analyzing Weather Input Sensitivities of the Joint Precision Air Drop System*. AFIT/GSE/ENY/07J-01. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: 516<sup>th</sup> ASW/XR.

HARDER, ADAM, D., *Experimental Characterization of Turbulent Flow around Cylinder Arrays*. AFIT/GAE/ENY/07-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: 46TW/OG.

MAIORANO, ERIKA E., *Decision Analysis with Value Focused Thinking as a Methodology to Select Buildings for Deconstruction*. AFIT/GEM/ENV/07-M9. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: WPAFB, Env. Mgt. (AFMC).

MAYNARD, JILL L., *Commercial Firm Training Practices Versus Aerial Port Hazardous Cargo Frustration*. AFIT/GLM/ENS/07-08. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFMC/LSO.

### **AERONAUTICAL SYSTEMS CENTER**

ASHER, DOUGLAS W., MARK BLOMME, SHAWN COREY and ROBERT FILBEY. *Impact Analysis of Electronic Attack on Airborne Synthetic Aperture Radar*. AFIT/ISE/ENY/07J-03. Faculty Advisor: Dr. David Jacques. Sponsor: 659 AESS (ASC).

BLOMME, MARK, see ASHER, DOUGLAS W.

COLE III, GEORGE P., *Feasibility Study of Variance Reduction in the Logistics Composite Model*. AFIT/GLM/ENS/07-04. Faculty Advisor: Dr. Alan Johnson. Sponsor: ASC/ENMS.

COREY, SHAWN, see ASHER, DOUGLAS W.

FILBEY, ROBERT, see ASHER, DOUGLAS W.

### **AIR FORCE RESEARCH LABORATORY [AFRL]**

#### **AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH**

ABAN, EDMUND D., *Adaptive Gravitational Gossip in Monitoring the Joint Battlespace Infosphere*. AFIT/GCS/ENG/07-01. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

BACK, CHRISTOPHER A., *Effects of Prior Aging on the Creep Response of Carbon Fiber Reinforced PMR-15 Neat Resin at 288°C in an Air Environment*. AFIT/GAE/ENY/07-J02. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NL and AFRL/MLBCM.

BROECKERT, JOSEPH L., *Effects of Prior Aging at Elevated Temperature in Air and in Argon Environments on Creep Response of PMR15 Neat Resin*. AFIT/GMS/ENY/07-M01. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFOSR/NE.

CAMERON, GREGORY J., *An Evaluation of High Velocity Wear*. AFIT/GAE/ENY/07-M06, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFOSR/NM.

CAMPBELL, JOSHUA S., STANLEY L. COOLEY, MATTHEW F. DURKIN, AND BRIAN K. MADDOCKS. *Investigating Hastily-Formed Collaborative Networks*. AFIT/GSE/ENY/07-M01. Faculty Advisor: LtCol John M. Colombi. Sponsor: AFOSR.

GARNER, ROGER L., *Heuristically Driven Search Methods for Topology Control in Directional Wireless Hybrid Networks*. AFIT/GCS/ENG/07-03. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

GRAHAM, DANIEL F., *On-Demand Key Distribution for Mobile Ad-Hoc Networks*. AFIT/GCS/ENG/07-12. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated Al<sub>x</sub>Ga<sub>1-x</sub>N/GaN Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence*. AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

HARMON, DUANE F., *Overcoming TCP Degradation in the Presence of Multiple Intermittent Link Failures Utilizing Intermediate Buffering*. AFIT/GE/ENG/07-11. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

LADRIDO, CHRISTINE G., *Effect of Prior Aging on Fatigue Response of IM7/BMI 5250-4 at 191°C*. AFIT/GAE/ENY/07-J10. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NE and AFRL/MLBCM.

LLEWELLYN, LARRY C., II, *Distributed Fault-Tolerant Quality of Service Routing in Hybrid Directional Wireless Networks*. AFIT/GE/ENG/07-15. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR and AFRL/IF.

NEWLON, THOMAS M., *Mathematical Programming Model for Fighter Training Squadron Pilot Scheduling*. AFIT/GOR/ENS/07-17. Faculty Advisor: Dr. James Moore. Sponsor: AFOSR/NM.

PARK, HEUNG SOON, *Effective Mobile Routing Through Dynamic Addressing*. AFIT/GCS/ENG/07-09. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

SAILSMAN, JERMAINE S., *Modeling Acoustic Effects on Shear Coaxial Jet Flow Utilizing Molecular Dynamic Simulation*. AFIT/GA/ENY/07-M16. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFOSR.

SALADIN, ERIK, C., *The Effect of Microstructure on Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GMS/ENY/07-M02. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFOSR/NA.

SALVIA, ROBERT A., *Effects of prior aging at 191°C on creep response of IM7/BMI 5250-4*. AFIT/GAE/ENY/07-J23. Faculty Advisors: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/MLBCM and AFOSR/NL.

STUCKEY, NATHAN C., *Stochastic Estimation and Control of Queues Within a Computer Network*. AFIT/GE/ENG/07-24. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFOSR.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials*. AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

ADAMS, BRANDON, J., *Structural Stability of a Joined-Wing Sensorcraft*. AFIT/GAE/ENY/07-J01. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASD.

ANDREWS, JENNIFER P., *Lamb Wave Propagation in Varying Thermal Environments*. AFIT/GA/ENY/07-M01. Faculty Advisor: Dr. Anthony N. Palazotto. AFRL/VASA.

BURKINSHAW, MATTHEW G., *Comparative Study of Aerodynamic Interference During Aft Dispense of Munitions*. AFIT/GAE/ENY/07-J03. Faculty Advisor: LtCol Raymond C. Maple. Sponsor: AFRL/VAAI.

BURNS, BRIAN S., *Autonomous Unmanned Aerial Vehicle Rendezvous for Automated Aerial Refueling (AAR)*. AFIT/GAE/ENY/07-M05. Faculty Advisor: Maj Paul Blue. Sponsor: AFRL/VAC.

CARR, RYAN, *Quantifying Non-Equilibrium in Hypersonic Flows Using Entropy Generation*. AFIT/GAE/ENY/07-M07. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/VASD.

CRIDER, JEFFREY S., *Damage Detection Using Lamb Waves for Structural Health Monitoring*. AFIT/GA/ENY/07-M05. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/VASA.

DILLSAVER, MATTHEW, J., *Experimental Investigation of Oblique Wing Aerodynamics at Low Speed*. AFIT/GAE/ENY/07-M10. Faculty Advisor: Dr. Milton Franke. Sponsor: AFRL/VAAA.

FRANKE, C. J., *Aircraft Engine Cycle Optimization for the Next Generation Theater Transport*. AFIT/GAE/ENY/07-M11. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/VAOT.

HAN, SEJIN, *Finite Element Analysis of Lamb Waves Acting within a Thin Aluminum Plate*. AFIT/GAE/ENY/07-S02. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASA.

HEUCK JR., WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems*. AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/VAOT.

KILLIAN, D. N., *The Aerodynamic Performance of the Houck Configuration Flow Guides*. AFIT/GAE/ENY/07-J09. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

MARLIN, MICHAEL J., *Wide Area Search and Engagement Simulation Validation*. AFIT/GAE/ENY/07-M17. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/VAC.

MCNIEL, CHARLES M., *Demonstration of Clean Particle Seeding for Particle Image Velocimetry in a Closed Circuit Supersonic Wind Tunnel*. AFIT/GAE/ENY/07-M19. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAI.

MENDOZA, L. L., JR., *Damage Considerations of a Flexible Micro Air Vehicle Wing Using 3-D Laser Vibrometry*. AFIT/GAE/ENY/07-J13. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

MICHALSKI, SYDNEY C., *Determining Logistics Ground Support Manpower Requirements for a Reusable Military Launch Vehicle*. AFIT/GLM/ENS/07-09. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VACD.

PELTIER, D. W., *Performing Particle Image Velocimetry in a Supersonic Wind Tunnel Using Carbon Dioxide As The Seed Material*. AFIT/GAE/ENY/07-J17. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAA.

ROSARIO, ROLAND A., *Optimal Sensor Threshold Control and the Weapon Operating Characteristic for Autonomous Search and Attack Munitions*. AFIT/GAE/ENG/07-02. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/VA.

RUFA, JUSTIN, R., *Development of an Experimental Platform for Testing Autonomous UAV Guidance and Control Algorithms*. AFIT/GAE/ENY/07-M20. Faculty Advisor: Maj. Paul A. Blue. Sponsor: AFRL/VAC.

SMITH, JEREMY J., *Simulation of the Dynamically Coupled KC-135 Tanker and Refueling Boom*. AFIT/GAE/ENY/07-M21. Faculty Advisor: Dr. Donald Kunz. Sponsor: AFRL/VACD.

SPENCER, JAMES H., *Optical Tracking for Relative Positioning in Automated Aerial Refueling*. AFIT/GE/ENG/07-22. Faculty Advisor: LtCol Matthew Goda. Sponsor: AFRL/VACC.

TOBIAS, A. P., *Experimental Methods to Characterize Nonlinear Vibration of Flapping Wing Micro Air Vehicles*. Faculty Advisor: AFIT/GAE/ENY/07-M23. Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

WALKER, MICHAEL M., *The Aerodynamic Performance of the 24 Inch Houck Configuration*. AFIT/GAE/ENY/03-M30. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

WALKER, ROBERT L., *Finite Element Solution: Nonlinear Flapping Beams for Use With Micro Air Vehicle Design*. AFIT/GAE/ENY/07-M26. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASD.

WESTFALL, J.T., *Structural Optimization of a Distributed Actuation System in a Flexible Inplane Morphing Wing*. AFIT/GAE/ENY/07-J22. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASA.

ZOLLARS, MICHAEL, D., *Optimal Wind Corrected Flight Path Planning For Autonomous Micro Air Vehicles*. AFIT/GAE/ENY/07-M28. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFRL/VAC.

#### AFRL: DIRECTED ENERGY DIRECTORATE

BAIRD, C. JAMES., *Direct Diode Pumped Raman Amplified Based on a Multimode Graded Index Fiber*. AFIT/GAP/ENP/07-01. Faculty Advisor: LtCol Thomas G. Alley. Sponsor: AFRL/DE.

GAMBOA, OMAR, *Stimulated Brillouin Scattering Beam Cleanup and Beam Phasing Through Two Passive Channels*. AFIT/GAP/ENP/07-03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: AFRL/DE.

WISDOM, BRETT W., *Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology*. AFIT/GEO/ENP/07-02. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: AFRL/DE.

#### AFRL: HUMAN EFFECTIVENESS DIRECTORATE

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis*. AFIT/GOR/ENS/07-07. Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

FORTSON, LARRY W., JR., *Towards the Development of a Defensive Cyber Damage and Mission Impact Methodology*. AFIT/GIR/ENV-M9. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/HEX.

SCHWENN, KARL R., *Biological Cell Identification by Integrating Micro-Fluids, Electrical Impedance Spectroscopy and Stochastic Estimation*. AFIT/GE/ENG/07-20. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFRL/HEPB.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure*. AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

SEYBA, JASON R., *Voice and Video Capacity of a Secure Wireless System*. AFIT/GCS/ENG/07-14. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/HE.

#### AFRL: INFORMATION DIRECTORATE

DEFREITAS, ADRIAN A., *Developing Parallel Ant Colony Synchronization Strategies*. AFIT/GCS/ENG/07-15. Faculty Advisor: Maj Christopher B. Mayer. Sponsor: AFRL/IFS.

FENSTERER, GERALD D., *Planning and Assessing Stability Operations: A Proposed Value-Focused Thinking Approach*. AFIT/GOR/ENS/07-06. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/IFSE.

LLEWELLYN, LARRY C., II, *Distributed Fault-Tolerant Quality of Service Routing in Hybrid Directional Wireless Networks*. AFIT/GE/ENG/07-15. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR and AFRL/IF.

STEVENS, MICHAEL R., *Use of Trust Vectors in Support of the CyberCraft Initiative*. AFIT/GIA/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/IFGB.

WINNINGHAM, BRYAN W., *Characterization of Intercalated Graphite Fibers for Microelectromechanical Systems (MEMS) Applications*. AFIT/GE/ENG/07-25. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/IFTA.

#### AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

ALLARD, MARK E., *Characterization of a Polymer-Based MEMS Pyroelectric Infrared Detector*. AFIT/GEO/ENG/07-01. Faculty Advisor: LtCol James A. Fellows. Sponsor: AFRL/MLPJF.

BACK, CHRISTOPHER A., *Effects of Prior Aging on the Creep Response of Carbon Fiber Reinforced PMR-15 Neat Resin at 288°C in an Air Environment*. AFIT/GAE/ENY/07-J02. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NL and AFRL/MLBCM.

BRAUN, JASON C., *Effects of Temperature and Environment on Creep Behavior of an Oxide-Oxide Ceramic Matrix Composite*. AFIT/GAE/ENY/07-M04, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC and AFRL/MLLN.

KATWYK, DAVID W., *Tension-Compression Fatigue Behavior of a Carbon Fiber/Epoxy (IM7/EPON 862) Composite Fabricated Using Vacuum Assisted Resin Transfer Molding Process*. AFIT/GA/ENY/07-M14. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLBCO.

LINK, P. E., *High Temperature Degradation of 5250-4 Polymer Resin*. AFIT/GAE/ENY/07-J12. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/ML.

SALVIA, ROBERT A., *Effects of prior aging at 191°C on creep response of IM7/BMI 5250-4*. AFIT/GAE/ENY/07-J23. Faculty Advisors: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/MLBCM and AFOSR/NL.

SCHWENDIMAN, K.A., *Critical Life Prediction Research on Boron-Enhanced Ti-6Al-4V*. AFIT/GAE/ENY/07-J24. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLMD.

SUTTER, DAVID, A., *Three-Dimensional Analysis of a Composite Repair and the Effect of Overply Shape Variation on Structural Efficiency*. AFIT/GAE/ENY/07-M22. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/MLBC.

#### AFRL: MUNITIONS DIRECTORATE

BELLOTT, MARK M., *Microelectro-Mechanical (MEMS) Safe and Arm Device*. AFIT/GE/ENG/07-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

FLETCHER, JORDAN L., *Real-Time GPS-Alternative Navigation Using Commodity Hardware*. AFIT/GCS/ENG/07-02. Faculty Advisor: Maj Michael J. Veth. Sponsor: AFRL/MN.

GLAUVITZ, NATHAN E., *Toward a Flying MEMS Robot*. AFIT/GE/ENG/07-09. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNAV.

MILLER, VIRGINIA., *Conceptual MEMS Devices for a Redeployable Antenna*. AFIT/GE/ENG/07-30. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials*. AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

AFRL: PROPULSION DIRECTORATE

AN, YOUNG MAN., *Raman Scattering Study of Supercritical Bi-Component Mixtures Injected into a Subcritical Environment*. AFIT/GA/ENY/07-S01. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRAS.

ANDERSON, WESLY S., *Design, Construction, and Validation of the AFIT Small Scale Combustion Facility and Section Model of the Ultra-Compact Combustor*. AFIT/GAE/ENY/07-M01. Faculty Advisor: Maj Richard Branam. Sponsor: AFRL/PRS and AFRL/PRTC.

ANDRUS, IONIO Q., *Comparative Analysis of a High Bypass Turbofan Using a Pulsed Detonation Combustor*. AFIT/GAE/ENY/07-M02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTA.

BATCHELOR, RYAN G., *Fuel Spray Analysis of The F-22 Augmentor Pilot Fuel Injector*. AFIT/GAE/ENY/07-S01. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRTC.

BRAUN, JASON C., *Effects of Temperature and Environment on Creep Behavior of an Oxide-Oxide Ceramic Matrix Composite*. AFIT/GAE/ENY/07-M04, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC and AFRL/MLLN.

GREATTING, HEATHER, *Analysis of the Feasibility of a Space-Based ICBM Interceptor and Propulsion System Trade Study*. AFIT/GA/ENY/07-M09. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRS.

HOFFMAN, DAVID A., *Experimental Investigation of Turbojet Thrust Augmentation Using an Ejector*. AFIT/GAE/ENY/07-M13. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTC.

HOWELL, THOMAS G., *Catalytic Partial Oxidation Reforming of JP8 and S8*. AFIT/GAE/ENY/07-J08. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRPS.

JANTZ, BRADLEY. *Contamination of the TacSat-2 Spacecraft Structure by a 200-Watt Hall Effect Thruster*. AFIT/GA/ENY/07-M13. Faculty Advisor: Maj Richard Branam. Sponsor: AFRL/PRS.

LAFHEY, P. D., *The Effects of Environment on the Interlaminar Shear Performance of an Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature*. AFIT/GAE/ENY/07-J11. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

KOETHER, STEPHEN J., *Validation of the AFIT Small Scale Combustion Facility and OH Laser-Induced Fluorescence of an Atmospheric Laminar Premixed Flame*. AFIT/GAE/ENY/07-S03. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

RADTKE, J. T., *Efficiency and Pressure Loss Characteristics of an Ultra-Compact Combustor with Bulk Swirl*. AFIT/GAE/ENY/07-J18. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

SZYMCZAK, N.R., *Compressive Creep Behavior of Nextel™ 720/Alumina Ceramic Matrix Composite At 1200°C in Air and in Steam Environment*. AFIT/GAE/ENY/07-J20. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

TOMASZEWSKI, JAMES W., *Characterization of a Hall Effect Thruster Using Thermal Imaging*. AFIT/GA/ENY/07-M18. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRS.

UMHOLTZ, M., *A Comparison of Film Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring*. AFIT/GAE/ENY/07-J21. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRF.

WHITING, BRIDGETT A., *Cyclic Creep and Recovery Behavior of Nextel™ 720/Alumina Ceramic Matrix Composite at 1200 °C in Air and in Steam Environments*. AFIT/GAE/ENY/07-S05. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTS.

#### AFRL: SENSORS DIRECTORATE

ABBOTT, LAIRD, GARRETT KNOWLAN, CRAIG PHILLIPS and CHRISTIAN STILLINGS. *Systems Engineering Analysis for Transition of the Fleeting Target Technology Demonstrator*. AFIT/GSE/ENY/07-M03. Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/SN.

ALBAIRAT, OUAIL, *Multi-Dimensional Classification Algorithm for Automatic Modulation Recognition*. AFIT/GE/ENG/07-01. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNR.

BARTON, RICHARD J., *Design and Analysis of a Compact Passive Ultra-Wideband Hexagonal Spiral Array Antenna*. AFIT/GE/ENG/07-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFRL/SNR.

BENSON, JOSHUA A., *Software Protection Against Reverse Engineering Tools*. AFIT/GIA/ENG/07-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

BIRRER, BOBBY D., *Metamorphic Program Fragmentation as a Software Protection*. AFIT/GCE/ENG/07-01. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

BRAKUS, BRIAN M., *A Modular Mixed-Signal VLSI Design Approach for Digital Radar Applications*. AFIT/GCE/ENG/07-02. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SND.

BUSCHELMAN, ERIC A., *Material Characterization Improvement in High Temperature Rectangular Waveguide Measurements*. AFIT/GE/ENG/07-05. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/SNS.

HAKER, MARSHALL E., *Hardware Realization of a Transform Domain Communications System*. AFIT/GE/ENG/07-10. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRW.

HARKISS, SAMUEL I., *A Study of Bi-Directional Reflectance Distribution Functions and their Effect on Infrared Signature Models*. AFIT/GE/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SN.

HARNER, ALAN L., *Sub-Surface Navigation Using Very-Low Frequency Electromagnetic Waves*. AFIT/GE/ENG/07-12. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRP.

HART, SAMUEL A., *APHID: Anomaly Processor in Hardware for Intrusion Detection*. AFIT/GCE/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

HAYDEN, WALTER J., *Locating Encrypted Data Hidden Among Non-Encrypted Data Using Statistical Tools*. AFIT/GCS/ENG/07-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

HOLSTON, MATTHEW E., *Moving Target Focusing, Geolocation, and Ambiguity Resolution Using Single-Channel Synthetic Aperture Radar*. AFIT/GE/ENG/07-13. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

JONES, DAVID A., *Portable Diode Pumped Femtosecond Lasers*. AFIT/GAP/ENP/07-04. Faculty Advisor: LtCol Matthew J. Bohn. Sponsor: AFRL/SN.

KNOWLAN, GARRET, see ABBOTT, LAIRD

KOPERSKI, CHOYONG G., *Multi-Robot FastSLAM for Large Domains*. AFIT/GCE/ENG/07-06.  
Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

LEAVER, MICHAEL D., *Signal Coexistence Study on the GPS L2 Civil Signal Broadcast From the Block IIR-M Class Satellites*. AFIT/GE/ENG/07-14. Faculty Advisor: Dr. Stewart L. DeVilbiss. Sponsor: AFRL/SNZW.

MAJUMDER, UTTAM K., *Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular Synthetic Aperture Radar*. AFIT/GE/ENG/07-26. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

MAYHEW, OSCAR C., *RADAR System Characterization Extended to Hardware-in-the-Loop Simulation for the Lab-Volt System*. AFIT/GE/ENG/07-29. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/SN.

MEDLEY, DOUGLAS P., *Virtualization Technology Applied to Rootkit Defense*. AFIT/GCE/ENG/07-08.  
Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SN.

MONTIMINY, MYRNA B., *Passive Geolocation of Low-Power Emitters in Urban Environments Using TDOA*. AFIT/GE/ENG/07-16. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/SNRW.

MOTT, STEPHEN D., *Hardware-Based Primitives to Enhance Parallel Security Monitoring in a Novel Computing Architecture*. AFIT/GE/ENG/07-17. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

NERENBERG, DANIEL D., *A Study of Rootkit Stealth Techniques and Associated Detection Methods*. AFIT/GCE/ENG/07-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

PATTERSON, CHRISTOPHER A., *Multi-Objective Optimization for Speed and Stability of a Sony AIBO Gait*. AFIT/GCS/ENG/07-17. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

PAUL, JASON V., *Anti-Tamper Method for Field Programmable Gate Arrays Through Temporal Decoy Circuits*. AFIT/GE/ENG/07-18. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SNTA.

PEREZ, SERGIO P., *Amplitude Comparison Method to Determine Direction of Arrival for RF Communication*. AFIT/GE/ENG/07-27. Faculty Advisor: LtCol Juan R. Vasquez. Sponsor: AFRL/SNAT.

PHILLIPS, CRAIG, see ABBOTT, LAIRD

SEAL, MICHAEL D., *Nonlinear Time-Variant Response in an Avalanche Photodiode Array Based Laser Detection and Ranging System*. AFIT/GEO/ENG/07-03. Faculty Advisor: Dr. Stephen C. Cain.  
Sponsor: AFRL/SNJM.

SHELL, SCOTT A., *Optical Parametric Oscillation in Orientation-Patterned Gallium Arsenide*. AFIT/GMS/ENP/07-01. Faculty Advisor: LtCol Thomas G. Alley. Sponsor: AFRL/SN.

SILVA, RYAN J., *Implementation and Optimization of the Advanced Encryption Standard Algorithm on an 8-Bit Field Programmable Gate Array Hardware Platform*. AFIT/GE/ENG/07-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

SPANGLER, BRETT R., *Characterizing the Solar Wind Using DMSP Ion Drift Data*. AFIT/GAP/ENP/07-J01. Faculty Advisor: LtCol Christopher G. Smithtro. Sponsor: AFRL/SN.

STILLINGS, CHRISTIAN, see ABBOTT, LAIRD

TODD, ADAM D., *Network Intrusion Detection System Evasion*. AFIT/GIA/ENG/07-04. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SN.

VELOTTA, JAMIE S., *Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/07-31. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRN.

WOOLLEY, BRIAN G., *Unified Behavior Framework for Reactive Control in Real-Time Systems*. AFIT/GCS/ENG/07-11. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

#### AFRL: REQUIREMENTS DIRECTORATE

ROMERO, MICHAEL A., *Identifying and Assessing Effective Mechanisms for Technology Transfer*. AFIT/GRD/ENV/07-M6. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/XR.

#### AFRL: SPACE VEHICLES DIRECTORATE

EASLEY, SHAUN M., *Anisotropy in the South Atlantic Anomaly*. AFIT/GAP/ENP/07-02. Faculty Advisor: LtCol Christopher G. Smithro. Sponsor: AFRL/VS.

GARGASZ, MICHAEL LUKE, *Optimal Spacecraft Attitude Control Using Aerodynamic Torques*. AFIT/GA/ENY/07-M08. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: AFRL/VSES.

GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated  $Al_xGa_{1-x}N/GaN$  Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence*. AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

MCLAUGHLIN, ANNIE, B., JESSE T. MCLAUGHLIN, JASON S. PRITCHETT, JOHN H. STONE and GREGORY K. VAN DYK. *Protection of a High-Valued Space Asset*. AFIT/GSE/ENY/07M-04. Dr. Richard Cobb. AFRL/VS.

MCLAUGHLIN, JESSE T., see MCLAUGHLIN, ANNIE B.

MONTIMINY, DAVID P., *Using Relocatable Bitstreams for Fault Tolerance*. AFIT/GCE/ENG/07-09. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VSSE.

NAFF, JEFFREY E., *Quick-Turn Finite Element Analysis for Plug-and-Play Satellite Structures*. AFIT/GA/ENY/07-M15. Maj Eric D. Swenson. Sponsor: AFRL/VSSV.

POMAGER, JOSEPH C., *Parametric Reliability of Space-Based Field Programmable Gate Arrays*. AFIT/GE/ENG/07-19. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/VSEE.

PRICHETT, JASON S., see MCLAUGHLIN, ANNIE B.

STEENBURGH, ROBERT A., *Holes: Ionospheric Scintillation GPS and Imputation*. AFIT/GAP/ENP/07-06. Faculty Advisor: LtCol Christopher G. Smithro. Sponsor: AFRL/VS.

STONE, JOHN H., see MCLAUGHLIN, ANNIE B.

VANDYK, GREGORY K., see MCLAUGHLIN, ANNIE B.

WERNER, JOSHUA T., *Assessment of the Impact of Various Ionospheric Models on High-Frequency Signal Raytracing*. AFIT/GAP/ENP/07-07. Faculty Advisor: LtCol Christopher G. Smithro. AFRL/VS.

#### **4.2.6. AIR MOBILITY COMMAND**

POLOMSKY, ROBERT D., *Air Mobility Command's En Route Support Infrastructure: a Construct of Aircraft Type and Geographic Location Utilized to Assess En Route Aircraft Logistics Support*. AFIT/GIR/ENV/07-J2. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: HQ AMC/A49.

#### **4.2.7. AIR FORCE SPACE COMMAND**

MCDONALD, GAVAIN K., *Work-Home Conflict: A Study of the Impact of Role Conflict on U.S. Air Force Company Grade Officer Turnover Intentions*. AFIT/GLM/ENV/07-M4. Faculty Advisor: Maj Sharon Heilmann. Sponsor: 30 SW/CC.

RASHASH, SANDRA M., *Radar Orbit Analysis Tool Using Least Squares Estimator*. AFIT/GSS/ENV/07-S01. Faculty Advisor: Dr. William Wiesel. Sponsor: HQ AFSPC/XPY.

#### **4.2.8. USAF FIELD OPERATING AGENCIES**

##### **AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE**

FALCONE, JEFFREY T., *Using Value-Focused Thinking to Evaluate the Use of Innovative Stormwater Management Technologies on Air Force Installations*. AFIT/GEM/ENV/07-M5. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFCEE.

POWELL, WILLIAM C., *Development of a Screening Model for Design and Costing of an Innovative Tailored Granular Activated Carbon Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/07-M12. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SECODY, ROLAND E., *Modeling In Situ Bioremediation of Perchlorate-Contaminated Groundwater*. AFIT/GEM/ENV/07M-13. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

VALENCIA, VHANCE V., *A Project Manager's Personal Attributes as Predictors for Success*. AFIT/GEM/ENV/07-M16. Faculty Advisor: LtCol Daniel T. Holt. Sponsor: AFCEE.

##### **AIR FORCE CIVIL ENGINEER SUPPORT AGENCY**

DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower*. AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane Knighton. Sponsor: AFCESA/CEXF.

DIAZ, DANIEL, JR., *Diffusion of Innovation: Factors Promoting Interest in Solar Photovoltaic Generation Systems within Air Force Installations*. AFIT/GEM/ENV/07-M3. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCESA.

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops Using Value-Focused Thinking*. AFIT/GEM/ENS/07-03. Faculty Advisor: LtCol Jeffery Weir. Sponsor: AFCESA/CESC.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement, Partial-Depth Spall Repair Material*. AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane Knighton. Sponsor: HQ/AFCESA.

##### **AIR FORCE COMMUNICATIONS AGENCY**

ALSOP, ALAN S., *Beyond Passwords: Usage and Policy Transformation*, AFIT/GIR/ENV/07-M1. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCA/ECAI

BRAULT, GREGORY J., *Multi-Dimensional Range Querying Using a Modification of the Skip Graph*. AFIT/GE/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/ENAN.

MACDONALD, JASON E., *Use of Tabu Search in a Solver to Map Complex Networks onto Emulab Testbeds*. AFIT/GCE/ENG/07-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFCA/ENAN.

ROBERTS, DANIEL K., *Performance Analysis and Comparison of Multiple Routing Protocols in a Large-Area High-Speed Mobile Node Ad Hoc Network*. AFIT/GE/ENG/07-28. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/EN.

#### **AIR FORCE COST ANALYSIS AGENCY**

FUERING, JEFFERY C., *The Impact of Human Capital on the Cost of Air Force Acquisition Programs*. AFIT/GCA/ENV/07-M5. Faculty Advisor: LtCol Jeffrey S. Smith. Sponsor: AFCAA.

#### **AIR FORCE TECHNICAL APPLICATION CENTER**

HARR, LOGAN J., *Precise Calculation of Complex Radioactive Decay Chains*. AFIT/GNE/ENP/07-03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

#### **AF GEOGRAPHICAL INFORMATION SYSTEMS SUPPORT CENTER (AF GISSC)**

BRYANT, SCOTT A., *Geospatial Informational Security Risks and Concerns of the U.S. Air Force GeoBase Program*. AFIT/GEM/ENV/07-M1. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: USAF GIS Support Center.

#### **AIR FORCE TEST PILOT SCHOOL (AF TPS)**

DOTTER, JASON D., *An Analysis of Aircraft Handling Quality Data Obtained from Boundary Avoidance Tracking Flight Test Techniques*. AFIT/GAE/ENY/07-M24. Faculty Advisor: Maj Paul Blue. Sponsor: USAF Test Pilot School.

### **4.2.9. DEPARTMENT OF DEFENSE**

#### **DEFENSE LOGISTICS AGENCY (DLA)**

BUCK, JESSICA L., *Class VIIIA Materiel: What Problems were Encountered Transiting OIF Air Transshipment Nodes?* AFIT/GLM/ENS/07-02. Faculty Advisor: Dr. Alan Johnson. Sponsor: DLA/MS.

#### **DEFENSE THREAT REDUCTION AGENCY**

CARLSON, LONNIE, *Cobalt Doping of Semiconducting Boron Carbide using Cobaltocene*. AFIT/GNE/ENP/07-01. Faculty Advisor: LtCol David LaGrafte. Sponsor: DTRA/CS.

JONES, CHRISTOPHER P., *High Resolution Mesoscale Weather Data Improvement to Spatial Effects for Dose-Rate Contour Plot Predictions*. AFIT/GNE/ENP/07-04. Faculty Advisor: LtCol Steven T. Fiorino. Sponsor: DTRA/AFIT.

KLING, JOSEPH A., *The Sensitivity of RDD Contamination Predictions to Source Term Parameters*. AFIT/GNE/ENP/07-05. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DTRA/TD.

LUNDIN, MICHAEL A., *Passive Detection of Uranyl Compounds*. AFIT/GAP/ENP/07M-05. Faculty Advisor: LtCol Matthew J. Bohn. Sponsor: DTRA.

MAAS, MICHAEL R., *Directional Detection of Scattered Gamma Spectra by a Portable High Purity Germanium Detector*. AFIT/GNE/ENP/07-06. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DTRA/AFIT.

#### **HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE (HELJTO)**

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers*. AFIT/GAP/ENP/07-S01. Faculty Advisor: Maj Timothy Russell. Sponsor: HELJTO.

#### **OFFICE OF THE SECERETARY OF DEFENSE**

ORTH, DAVID F., *An Infrared Camera Simulation for Estimating Spatial Temperature Profiles and Signal-to-Noise Ratios of an Airborne Laser-Illuminated Target*. AFIT/GEO/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: DETEC (OSD).

#### **UNITED STATES STRATEGIC COMMAND**

NYSETH, NATHAN E., *Classifying Failing States*. AFIT/GOR/ENS/07-19. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

ROBINSON II., PAUL D., *Patterns of War Termination: A Statistical Approach*. AFIT/GOR/ENS/07-23. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

#### **UNITED STATES TRANSPORTATION COMMAND**

JACKSON JR., WILLIAM L., *The Viability of the Air Mobility Command Pure Pallet Program for U.S. Army Repairable Retrograde Shipments*. AFIT/GLM/ENS/07-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM J5/J4.

#### **4.2.10. UNITED STATES ARMY**

JORDAN, JEREMY D., *Updating Optimal Decisions Using Game Theory and Exploring Risk Behavior Through Response Surface Methodology*. AFIT/GOR/ENS/07-13. Faculty Advisors: Dr. Marcus Perry & Dr. Sharif Melouk. Sponsor: Department of Army.

NEWKIRK, M. C., *Process Improvements for the AH-64 Tail Rotor Vibration Analysis*. AFIT/GAE/ENY/07-J15. Faculty Advisor: Dr. Donald Kunz. Sponsor: AMRDEC.

#### **4.2.11. UNITED STATES NAVY**

HUDOCK, DAVID M., *Biofiltration as a Viable Alternative for Air Pollution Control at Department of Defense Surface Coating Facilities*. AFIT/GES/ENV/07-M3. Faculty Advisor: LtCol David A. Smith. Sponsor: CNAF.

SCURLOCK, ANTONIO J., *Strategic Planning to Conduct Joint Force Network Operations: A Content Analysis of NETOPS Organizations Strategic Plans*. AFIT/GIR/ENV/07-M18. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: DONCIO.

#### **4.2.12. DEPARTMENT OF ENERGY**

MAGALLANEZ JR., RAYMOND. *Surrogate Strategies for Computationally Expensive Optimization Problems with CPU-Time Correlated Functions*. AFIT/GOR/ENC/07-01. Faculty Advisor: LtCol Mark Abramson. Sponsor: Los Alamos National Lab.

#### **4.2.13. OTHER FEDERAL AGENCIES**

##### **ENVIRONMENTAL PROTECTION AGENCY (EPA)**

DIETZ, JOHN M., *Microbial Degradation of Fuel Oxygenates under Aerobic Conditions*.

AFIT/GES/ENV/07-M1. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: USEPA National Risk Management Research Laboratory.

GRACE, STEPHEN T., *The Effect of Orthophosphate as a Copper Corrosion Control Inhibitor in High Alkalinity Drinking Water Systems*. AFIT/GES/ENV/07-M2. Faculty Advisor: Dr. Mark N. Goltz.

Sponsor: USEPA Office of Research and Development.

##### **NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**

BRYANT, ADAM R., *Developing a Framework for Evaluating Organizational Information Assurance Metrics Programs*. AFIT/GIR/ENV/07-M5, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor:

NASA JPL.

##### **NATIONAL GEOSPATIAL INTELLIGENCE AGENCY (NGA)**

RICHARDS, EDWARD F., *Commercial PC Wireless for Tactical Operations*. AFIT/GSS/ENV/07-M02.

Faculty Advisor: LtCol Kerry Hicks. Sponsor: NGA/IIG.

##### **NATIONAL PARKS SERVICE (NPS)**

KWAN, KELLY E., *Selecting Electricity Generation Sources in Remote Locations*. AFIT/GEM/ENV/07-

M7. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: National Park Service.

##### **NATIONAL SECURITY AGENCY**

CHAPLA, ERIK A., *Statistical Machine Translation of Japanese*. AFIT/GE/ENG/07-06. Faculty

Advisor: Dr. Steven C. Gustafson. Sponsor: NSA.

HAAG, CHARLES R., *An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm With Application to the Detection of Distributed Computer Network Intrusions*. AFIT/GCS/ENG/07-05.

Faculty Advisor: Dr. Gary B. Lamont. Sponsor: NSA/NCSC.

### **4.3. GRADUATE RESEARCH PAPERS**

Note: Students in non-thesis graduate program at AFIT may write graduate research papers.

#### **4.3.1. HQ UNITED STATES AIR FORCE**

BENNETT JR. EARL R., CARL D. HUTCHERSON and ANTHONY L. PUENTE. *Change Management Barriers and Successful Strategies for ERP Implementation in Highly Regulated Industries: A Meta-Synthesis and Field Case Study*. AFIT/ILM/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: HAF/A4IT.

FALARDEAU, LARA L., *Downsizing Triage: Do the Survivors of the Recent AF Downsizing Intend to Stay?* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: HQ USAF/A1.

GORDON, CAROL and JEFFREY R. KRUSINSKI. *Assessing Personnel Transformation Implementation to Established Change Management Standards*. AFIT/ILM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ USAF/A1X.

HUTCHERSON, CARL D. See BENNETT JR. EARL R.

KRUSINSKI, JEFFREY R. See GORDON, CAROL.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense*. AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HAF/A8X & AFSFC/FPB.

PUENTE, ANTHONY L. See BENNETT JR. EARL R.

SLAUGHTER, DWAIN A., See CORAL, CEIR.

WYLIE, ALEXANDER M., *Optimization of Rated Officer Staff Assignments*. AFIT/IOA/ENS/07-03. Faculty Advisor: Maj Shane Hall. Sponsor: HAF/A1/AFPC/DPAOS.

#### **4.3.2. OFFICE OF THE SECRETARY OF THE AIR FORCE**

BARNHART, BRADLEY W. and FREDRICK W. WAINWRIGHT. *The Current State of Biometrics to Enhance Network Information Assurance for Air Force Networks*. AFIT/IC4/ENG/07-02. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XC.

HILL, WILLIAM R., II, MICHAEL E. PHILLIPS, BRANDON J. ROBINSON and RAINIER TANGLAO. *Managing the Force Development of the AF Communications Officer into the Future*. Faculty Advisor: Col Robyn M. King. Sponsor: SAF/XC.

PHILLIPS, MICHAEL E., See HILL, WILLIAM R.

ROBINSON, BRANDON J., See HILL, WILLIAM R.

TANGLAO, RAINIER, See HILL, WILLIAM R.

WAINWRIGHT, FREDRICK W. See BARNHART, BRADLEY W.

#### **4.3.3. AIR COMBAT COMMAND**

DIETRICH III, GEORGE T. M., *The Future of Cargo Airdrop Rigging: A Logistical Support Analysis*. AFIT/IMO/ENS/07-02. Faculty Advisor: Dr. James Moore. Sponsor: AEFC.

MATHES, MICHAEL N., *Concepts for Defeating Pro-Nav Air to Air Missiles*. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: NASIC.

SEIBERT, HARRY L., JR., *A-10 Realignment: Factors Affecting Future Sortie Production at Davis-Monthan Air Force Base*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 355<sup>th</sup> AMXS.

#### **4.3.4. AIR EDUCATION AND TRAINING COMMAND**

OLIVER, BRADLEY R., *Optimizing the Undergraduate Pilot Training Scheduling Process*. AFIT/IOA/ENS/07-01. Faculty Advisor: Maj August Roesener. Sponsor: AETC & AFPC

#### **19<sup>TH</sup> AIR FORCE**

SCHMIDT, LANCE E., *Rethinking MC-130H Pilot Training: Applying AFSO21 to Formal School Training*. AFIT/IMO/ENS/07-14. Faculty Advisor: Dr. Alan Heminger. Sponsor: 19 AF/CV.

#### **AIR FORCE INSTITUTE OF TECHNOLOGY**

*NOTE:* Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

BROOKS, JEFFERY L., ELBERT L. COLEMAN JR., and GLEN M. GENOVE. *Investigating Air Operations Center (AOC) Knowledge Management Requirements*. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

COLEMAN, ELBERT L., JR., See BROOKS, JEFFERY L.

CONNOLLY, MICHAEL W., *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment*. Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

DOWNS, ROBERT O., JON T. HANNAH, and MICHAEL J. KARDOES. *Mitigation of Residual Bias in the Missile Defense Agency Tracking System*. AFIT/IC4/ENG/07-06. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

DUNKLEE, DAVID R., *Improving Air Force Active Network Defense Systems through an Analysis of Intrusion Detection Techniques*. AFIT/IC4/ENG/07-05. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

FAUTH, RODNEY L., JR., *Ethics in the Military: A Study of Major Themes in Recent Professional Writing*. Faculty Advisor: Dr. Kirk A. Vaughan. Sponsor: N/A.

GENOVE, GLEN M., See BROOKS, JEFFERY L.

HAYDEN, JEFFREY D. and SCOTT A. VAUGHAN. *United States Air Force Fuels Program: An Analysis of Automatic Data Collection Initial Investments*. AFIT/ILM/ENS/07-04. Faculty Advisor: Maj Barry Brewer. Sponsor: N/A.

HANNAH, JON T. See DOWNS, ROBERT O.

HOLT, JEFFREY D. and TIMOTHY M. TELEGA. *A Study of Optimal Commander Tour Length*, Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

HUISS, RANDALL S. *The Impact of Closing the C-17 Production Line on the C-17 Supplier Base*. AFIT/IMO/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: N/A.

HUNT, FREDERICK A., JR., *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment*. Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

HURST, BRITT K. and MARK D. ORIELLY. *Comparing the Combat Readiness of the Objective Wing and Combat Wing Organizational Structures*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

KARDOES, MICHAEL J. See DOWNS, ROBERT O.

KOCH, RICHARD T., *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment*. Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

KOTKIN, JEREMY S., *A Historical Analysis of Western Intervention in the Middle East to Provide a Way Ahead for the Iraq War and Middle Eastern Policy*. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

ORIELLY, MARK D., See HURST, BRITT K.

POLLOCK, PETER M., *Relationship Between Duty History and Selection for In-residence PME (IDE specific)*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

TELEGA, TIMOTHY M., See HOLT, JEFFERY D.

TREAT, TIMOTHY J., *The Way Ahead for Cyberspace Operations: A JCIDS Analysis*. AFIT/IC4/ENG/07-08. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

VILLELLA, MATTHEW C., *The Attributes of Appropriate Close Air Support Ordinance*. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

VAUGHAN, SCOTT A. See HAYDEN, JEFFREY D.

WOLLARD, JASON Z., *Inferences Concerning Junior Officers' Abilities and Traits Based on United States Air Force Officer Evaluation Reports*. Faculty Advisor: Daniel T. Holt. Sponsor: N/A.

#### **4.3.5. AIR FORCE MATERIEL COMMAND**

CAMPBELL, JASON L., *A Qualitative Analysis of the Possible Effects of "The New Process-Aligned Logistics Readiness Squadron" Structure on Heavily Contracted Logistics Readiness Organizations*. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: AFMC/A4R and 88ABW, Logistics Readiness Division.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense*. AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HQ AF/A8X & AFSFC/FPB.

JONES, ROY A., III and RANDAL D. WALKER. *Validation of Air Force Change Education and Management Processes*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFMC/A8C.

WALKER, RANDAL D., See JONES, ROY A., III.

#### **AIR FORCE RESEARCH LABORATORY**

CHAVASSE, NICHOLAS H., III, MATTHEW T. FRITZ and BRIAN F. ZANE. *Evaluating of a Non-Traditional Element Detection Device*. Faculty Advisor: Maj Sonia E. Leach. Sponsor: AFRL.

FRITZ, MATTHEW T., See CHAVASSE, NICHOLAS H., III.

ZANE, BRIAN F., See CHAVASSE, NICHOLAS H., III.

## **AERONAUTICAL SYSTEMS CENTER**

CORAL, CEIR and DWAIN A. SLAUGHTER. *F-16 Aircraft Common Configuration Implementation Program (CCIP): A Modernization Program Effects Case Study*. AFIT/ILM/ENS/07-02. Faculty Advisor: Maj Barry Brewer. Sponsor: ASC/312 AESG/DC.

## **USAF TEST PILOT SCHOOL (TPS)**

BIERYLA, JAMES J., *Processor Requirements for a Reconfigurable Airborne Sensor Pod*. AFIT/IES/ENG/07-01. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: USAF/TPS.

### **4.3.6. AIR MOBILITY COMMAND**

BUSCHUR, WILLIAM C., *An Analysis of the C-17 Two Expeditionary Airlift Squadron System*. AFIT/IMO/ENS/07-01. Faculty Advisor: Dr. James Moore. Sponsor: 437 OG/CD.

HESELTINE JR., BRUCE P., *KC-135R Fuel Savings*. AFIT/IMO/ENS/07-04. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3

JULIAN, JON T., *Distinguished Visitor Airlift Defensive Systems: Applying LEAN Principles to Minimize Transloading in the USCENTCOM AOR*. AFIT/IMO/ENS/07-07. Faculty Advisor: Lt Col Donald Duckro. Sponsor: AMC A3/MA.

KNACK, JOHN T., *Determination of Fabrication Repair Capability to Enable Aircraft Maintenance Regionalization*. AFIT/IMO/ENS/07-08. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AMC/A4.

MARTIN, TIM D., *AFSO 21 and the JA/ATT System*. AFIT/IMO/ENS/07-10. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

MCCRAY, GERALD R., *Implementation of Centralized Maintenance Management for Air Mobility Command Aircraft*. AFIT/IMO/ENS/07-11. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

PETERSON, EDWARD H., *Cargo Command and Control: Refining Mode Selection and Cross-Docking in the Military Air Cargo Distribution System*. AFIT/IMO/ENS/07-12. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ AMC/A4.

SCHLICHENMEYER, PATRICK L., *Air Force Manpower Reduction Analysis*. AFIT/IMO/ENS/07-13. Faculty Advisor: Dr. Michael Hicks. Sponsor: AMC/A9

## **18<sup>th</sup> AIR FORCE**

GITTNER, AARON W., *Intra-Theater Airlift Efficiency*. AFIT/IMO/ENS/07-03. Faculty Advisor: Dr. James Moore. Sponsor: 18 AF/CC.

SINDEL, COLIN J., *Leveraging Expeditionary Combat Support Operations: A Critical Look at Standardizing the Base Opening Concept*. AFIT/IMO/ENS/07-15. Faculty Advisor: Dr. William Cunningham, III. Sponsor: 18 AF/21 EMTF.

WILSON, CHRISTOPHER W., *KC-X Airlift Role; What Should It Be?* AFIT/IMO/ENS/07-16. Faculty Advisor: Dr. James Moore. Sponsor: 18th AF/CC.

#### **4.3.7. AIR FORCE SPACE COMMAND**

HOLBEIN, BRIAN K., *An Analysis of the Satellite Command and Control Operator Training System*.  
Faculty Advisor: Dr. Michael T. Rehg. Sponsor: AFSPC.

#### **4.3.8. UNITED STATES AIR FORCES IN EUROPE**

LAMBERT, CHRISTOPHER L., *Transforming Mobility Airlift Forces: Analysis of Air Mobility Platform Requirements for United States Air Forces in Europe*. AFIT/IMO/ENS/07-09. Faculty Advisor: Dr. James Moore. Sponsor: USAFE/A5/8/9.

#### **4.3.9. DEPARTMENT OF DEFENSE**

ARWOOD, SAM, *Cyberspace as a Theater of Conflict: Federal Law, National Strategy, and the Departments of Defense and Homeland Security*. AFIT/IC4/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: Joint Staff/J6.

## **5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION**

## **5.1. DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS**

Access Phone: 937-255-3069, DSN 785-3069

Fax: 937-656-7621, DSN 986-7621

Homepage: <http://www.afit.edu/en/eny/>

|              |                                                                            |           |
|--------------|----------------------------------------------------------------------------|-----------|
| <b>5.1.1</b> | <b><u>DOCTORAL DISSERTATIONS</u></b>                                       | <b>49</b> |
| <b>5.1.2</b> | <b><u>MASTER'S THESES</u></b>                                              | <b>49</b> |
| <b>5.1.3</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                     | <b>55</b> |
| <b>5.1.4</b> | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>                                  | <b>57</b> |
| <b>5.1.5</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                | <b>58</b> |
| <b>5.1.6</b> | <b><u>REFEREED CONFERENCES</u></b>                                         | <b>61</b> |
| <b>5.1.7</b> | <b><u>BOOKS &amp; CHAPTERS IN BOOKS</u></b>                                | <b>66</b> |
| <b>5.1.8</b> | <b><u>OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>66</b> |

### 5.1.1. DOCTORAL DISSERTATIONS

DREHER, PETER, A., *Dynamic Response of a Collidant Impacting a Low Pressure Airbag*. AFIT/DS/ENY/07-09. Faculty Advisor: Dr. Robert A. Canfield. Sponsor: N/A.

IRVIN JR., DAVID J., *Optimal Control Strategies for Constrained Relative Orbits*. AFIT/DS/ENY/07-03. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

JORRIS, TIMOTHY, R., *Common Aero Vehicle Autonomous Reentry Trajectory Optimization Satisfying Waypoint and No-Fly Zone Constraints*. AFIT/DS/ENY/07-04. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/VS.

SCHULZ, CHRISTOPHER S., *Rotorcraft Smoothing Via Linear Time Periodic Methods*. AFIT/DS/ENY/07-10. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: USA RDECOM.

### 5.1.2. MASTER'S THESES

#### 5.1.2.1. AERONAUTICAL ENGINEERING (GAE)

ADAMS, BRANDON, J., *Structural Stability of a Joined-Wing Sensorcraft*. AFIT/GAE/ENY/07-J01. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL

ANDERSON, WESLY S., *Design, Construction, and Validation of The AFIT Small Scale Combustion Facility and Section Model of the Ultra-Compact Combustor*. AFIT/GAE/ENY/07-M01. Faculty Advisor: Major Richard Branam. Sponsor: AFRL/PRS, and AFRL/PRTC.

ANDRUS, IONIO Q., *Comparative Analysis of a High Bypass Turbofan Using a Pulsed Detonation Combustor*. AFIT/GAE/ENY/07-M02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTA.

BACK, CHRISTOPHER A., *Effects of Prior Aging on the Creep Response of Carbon Fiber Reinforced PMR-15 Neat Resin at 288°C in an Air Environment*. AFIT/GAE/ENY/07-J02. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NL and AFRL/MLBCM.

BATCHELOR, RYAN G., *Fuel Spray Analysis of the F-22 Augmentor Pilot Fuel Injector*. AFIT/GAE/ENY/07-S01. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRTC.

BRAUN, JASON C., *Effects of Temperature and Environment on Creep Behavior of an Oxide-Oxide Ceramic Matrix Composite*. AFIT/GAE/ENY/07-M04, Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTC and AFRL/MLLN.

BURKINSHAW, MATTHEW G., *Comparative Study of Aerodynamic Interference During Aft Dispense of Munitions*. AFIT/GAE/ENY/07-J03. Faculty Advisor: LtCol Raymond C. Maple. Sponsor: AFRL/VAAI.

BURNS, BRIAN S., *Autonomous Unmanned Aerial Vehicle Rendezvous for Automated Aerial Refueling (AAR)*. AFIT/GAE/ENY/07-M05, Faculty Advisor: Maj Paul Blue. Sponsor: AFRL/VAC.

CAMERON, GREGORY J., *An Evaluation of High Velocity Wear*. AFIT/GAE/ENY/07-M06, Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFOSR/NM.

CARR, RYAN, *Quantifying Non-Equilibrium in Hypersonic Flows Using Entropy Generation*. AFIT/GAE/ENY/07-M07. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/VASD.

CASPERS, MATTHEW S., *CFD Investigation of Flow Past Idealized Engine Nacelle Chutter*. AFIT/GAE/ENY/07-M08 Faculty Advisor: LtCol Raymond C. Maple Sponsor: 46 TW OG.

CRIDER, KENDRA L., *Radial Diffusion Between Coaxial Cylinders*. AFIT/GAE/ENY/07-M09. Faculty Advisor: Dr. Paul I. King. Sponsor: NASIC/ADNA.

CROUSE, JOSHUA D., *Development of Cursor-on-Target Control for Semi-Autonomous Unmanned Aircraft Systems*. AFITGAE/ENY/07-J04. Research Advisor: Maj Paul Blue. Sponsor: N/A.

DENISON, NICHOLAS A., *Automated Carrier Landing of an Unmanned Combat Aerial Vehicle Using Dynamic Inversion*. AFIT/GAE/ENY/07-J06. Faculty Advisor: Maj Christopher Shearer. Sponsor: N/A.

DEVUONO, AMANDA J., *Flight Dynamic Response of HALE Aircraft to KC-135 Flowfield*. AFIT/GAE/ENY/07-S06. Faculty Advisor: Major Christopher Shearer. Sponsor: N/A.

DILLSAVER, MATTHEW, J., *Experimental Investigation of Oblique Wing Aerodynamics at Low Speed*. AFIT/GAE/ENY/07-M10. Faculty Advisor: Dr. Milton Franke. Sponsor: AFRL/VAAA.

DOTTER, JASON D., *An Analysis of Aircraft Handling Quality Data Obtained from Boundary Avoidance Tracking Flight Test Techniques*. AFIT/GAE/ENY/07-M24. Faculty Advisor: Maj Paul Blue. Sponsor: USAF Test Pilot School.

ETTER, ROBERT B., *CFD Investigation of Effect of Depth to Diameter Ratio on Dimple Flow*. AFIT/GAE/ENY/07-J07. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

FRANKE, C.J., *Aircraft Engine Cycle Optimization for the Next Generation Theater Transport*. AFIT/GAE/ENY/07-M11. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/VAOT.

HAN, SEJIN, *Finite Element Analysis of Lamb Waves Acting within a Thin Aluminum Plate*. AFIT/GAE/ENY/07-S02. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASA.

HARDER, ADAM D., *Experimental Characterization of Turbulent Flow around Cylinder Arrays*. AFIT/GAE/ENY/07-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: 46TW/OG.

HOFFMAN, DAVID A., *Experimental Investigation of Turbojet Thrust Augmentation Using an Ejector*. AFIT/GAE/ENY/07-M13. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRTC.

HOWELL, THOMAS G., *Catalytic Partial Oxidation Reforming of JP8 and S8*. AFIT/GAE/ENY/07-J08. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRPS.

KILLIAN, D. N., *The Aerodynamic Performance of the Houck Configuration Flow Guides*. AFIT/GAE/ENY/07-J09. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

KOETHER, STEPHEN J., *Validation of the AFIT Small Scale Combustion Facility and OH Laser-Induced Fluorescence of an Atmospheric Laminar Premixed Flame*. AFIT/GAE/ENY/07-S03. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

LADRIDO, CHRISTINE G., *Effect of Prior Aging on Fatigue Response of IM7/BMI 5250-4 at 191°C*. AFIT/GAE/ENY/07-J10. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsors: AFOSR/NE and AFRL/MLBCM.

LAFFEY, P.D., *The Effects of Environment on the Interlaminar Shear Performance of an Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature*. AFIT/GAE/ENY/07-J11. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

LINK, P. E., *High Temperature Degradation of 5250-4 Polymer Resin*. AFIT/GAE/ENY/07-J12. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/ML.

MARLIN, MICHAEL J., *Wide Area Search and Engagement Simulation Validation*. AFIT/GAE/ENY/07-M17. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/VAC.

MCGAHA, CHRISTOPHER C., *Filtered Rayleigh Scattering Measurements in a Buoyant Flowfield*. AFIT/GAE/ENY/07-M18. Faculty Advisor: Dr. Mark Reeder. Sponsor: N/A.

MCNIEL, CHARLES M., *Demonstration of Clean Particle Seeding for Particle Image Velocimetry in a Closed Circuit Supersonic Wind Tunnel*. AFIT/GAE/ENY/07-M19. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/VAAI.

MENDOZA, L. L., JR., *Damage Considerations of a Flexible Micro Air Vehicle Wing Using 3-D Laser Vibrometry*. AFIT/GAE/ENY/07-J13. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

MILLER, Z. R., *Final Development, Testing, and Flight Preparation of the Rigidizable Inflatable Get-Away-Special (RIGEX)*. AFIT/GAE/ENY/07-J14. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

NEWKIRK, M. C., *Process Improvements for the AH-64 Tail Rotor Vibration Analysis*. AFIT/GAE/ENY/07-J15. Faculty Advisor: Dr. Donald Kunz. Sponsor: AMRDEC.

O'NEAL, B. D., *Development and Testing of the Rigidizable Inflatable Get-Away-Special Experiment*. AFIT/GAE/ENY/07-J16. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

PELTIER, D. W., *Performing Particle Image Velocimetry in a Supersonic Wind Tunnel Using Carbon Dioxide as the Seed Material*. AFIT/GAE/ENY/07-J17. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAA.

RADTKE, J. T., *Efficiency and Pressure Loss Characteristics of an Ultra-Compact Combustor with Bulk Swirl*. AFIT/GAE/ENY/07-J18. Faculty Advisor: Dr. Paul King. Sponsor: AFRL/PRTC.

RUFA, JUSTIN, R., *Development of an Experimental Platform for Testing Autonomous UAV Guidance and Control Algorithms*. AFIT/GAE/ENY/07-M20. Faculty Advisor: Maj. Paul A. Blue. Sponsor: AFRL/VAC.

SALVIA, ROBERT A., *Effects of Prior Aging at 191°C on Creep Response of IM7/BMI 5250-4*. AFIT/GAE/ENY/07-J23. Faculty Advisors: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/MLBCM and AFOSR/NL.

SCHWENDIMAN, K.A., *Critical Life Prediction Research on Boron-Enhanced Ti-6Al-4V*. AFIT/GAE/ENY/07-J24. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLLMD.

SMITH, JEREMY J., *Simulation of the Dynamically Coupled KC-135 Tanker and Refueling Boom*. AFIT/GAE/ENY/07-M21. Faculty Advisor: Dr. Donald Kunz. Sponsor: AFRL/VACD.

SOLFELT, D. A., *CFD Analysis of a T-38 Wing Fence*. AFIT/GAE/ENY/07-J19. Faculty Advisor: LtCol Raymond Maple. Sponsor: N/A.

SUTTER, DAVID, A., *Three-Dimensional Analysis of a Composite Repair and the Effect of Overply Shape Variation on Structural Efficiency*. AFIT/GAE/ENY/07-M22. Faculty Advisor: Dr. Anthony Palazotto. Sponsor: AFRL/MLBC.

SZYMCZAK, N.R., *Compressive Creep Behavior of Nextel™ 720/Alumina Ceramic Matrix Composite at 1200°C in Air and in Steam Environment*. AFIT/GAE/ENY/07-J20. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFRL/PRTC.

TOBIAS, A. P., *Experimental Methods to Characterize Nonlinear Vibration of Flapping Wing Micro Air Vehicles*. Faculty Advisor: AFIT/GAE/ENY/07-M23. Dr. Anthony Palazotto. Sponsor: AFRL/VASD.

UMHOLTZ, M., *A Comparison of Film Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring*. AFIT/GAE/ENY/07-J21. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/PRF.

VANDERHYDE, MICHAEL J., *Comparison of Thermodynamic Equilibrium and Non-Equilibrium Representation of Materials*. AFIT/GAE/ENY/07-M25. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/MNAC and AFOSR.

WALKER, MICHAEL M., *The Aerodynamic Performance of the 24 Inch Houck Configuration*. AFIT/GAE/ENY/03-M30. Faculty Advisor: Dr. Mark Reeder. Sponsor: AFRL/VAAA.

WALKER, ROBERT L., *Finite Element Solution: Nonlinear Flapping Beams for Use With Micro Air Vehicle Design*. AFIT/GAE/ENY/07-M26. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/VASD.

WESTFALL, J.T., *Structural Optimization of a Distributed Actuation System in a Flexible Inplane Morphing Wing*. AFIT/GAE/ENY/07-J22. Faculty Advisor: Dr. Robert Canfield. Sponsor: AFRL/VASA.

WHITING, BRIDGETT A., *Cyclic Creep and Recovery Behavior of Nextel™ 720/Alumina Ceramic Matrix Composite at 1200 °C in Air and in Steam Environments*. AFIT/GAE/ENY/07-S05. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/PRTS.

ZOLLARS, MICHAEL, D., *Optimal Wind Corrected Flight Path Planning For Autonomous Micro Air Vehicles*. AFIT/GAE/ENY/07-M28. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFRL/VAC.

#### **5.1.2.2. ASTRONAUTICAL ENGINEERING (GA)**

AN, YOUNG MAN., *Raman Scattering Study of Supercritical Bi-Component Mixtures Injected into a Subcritical Environment*. AFIT/GA/ENY/07-S01. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/PRAS.

ANDREWS, JENNIFER P., *Lamb Wave Propagation in Varying Thermal Environments*. AFIT/GA/ENY/07-M01. Faculty Advisor: Dr. Anthony N. Palazotto. AFRL/VASA.

BALDWIN, JASON L., *Optimal Control of a Circular Satellite Formation Subject to Gravitational Perturbations*. AFIT/GA/ENY/07-M02. Faculty Advisor: LtCol Nathan Titus. Sponsor: N/A.

BRUNNER, ABRAHAM F., *Spacecraft Proximity Operations Used to Estimate the Dynamical & Physical Properties of a Resident Space Object*. AFIT/GA/ENY/07-M03. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

CLAYCAMP, RYAN C., *Threat Modeling of Spacecraft Attitude Control Subsystem*. AFIT/GA/ENY/07-M04. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: NASIC/SMSV.

CRIDER, JEFFREY S., *Damage Detection Using Lamb Waves for Structural Health Monitoring*. AFIT/GA/ENY/07-M05. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/VASA.

FRAM, BRYAN JOSHUA, *An Analysis of Operationally Responsive Space in Terms of Cost and Utility With the Use of a Hybrid Launch Vehicle*. AFIT/GA/ENY/07-M06. Faculty Advisor: Dr. Michael Heil. Sponsor: N/A.

GABRIELE, THOMAS PAUL., *Active Control of a Thin Deformable Inplane Actuated Mirror*. AFIT/GA/ENY/07-M07. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

GARGASZ, MICHAEL LUKE, *Optimal Spacecraft Attitude Control Using Aerodynamic Torques*. AFIT/GA/ENY/07-M08. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: AFRL/VSES.

GREATTING, HEATHER, *Analysis of the Feasibility of a Space-Based ICBM Interceptor and Propulsion System Trade Study*. AFIT/GA/ENY/07-M09. Faculty Advisor: Maj Richard D. Branam. Sponsor: AFRL/PRS.

GUETTLER, DAVID B., *Satellite Attitude Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HAJOVSKY, BLAKE B., *Satellite Formation Control Using Atmospheric Drag*. AFIT/GA/ENY/07-M11. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

HINES, MICHAEL S., *Fuel Estimation Using Dynamic Response*. AFIT/GA/ENY/07-M12. Faculty Advisor: LtCol Nathan A. Titus. Sponsor: N/A.

JANTZ, BRADLEY, *Contamination of the TacSat-2 Spacecraft Structure by a 200-Watt Hall Effect Thruster*. AFIT/GA/ENY/07-M13. Faculty Advisor: Major Richard Branam. Sponsor: AFRL/PRS.

KATWYK, DAVID W., *Tension-Compression Fatigue Behavior of a Carbon Fiber/Epoxy (IM7/EPON 862) Composite Fabricated Using Vacuum Assisted Resin Transfer Molding Process*. AFIT/GA/ENY/07-M14. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFRL/MLBCO.

NAFF, JEFFREY E., *Quick-Turn Finite Element Analysis for Plug-and-Play Satellite Structures*. AFIT/GA/ENY/07-M15. Major Eric D. Swenson. Sponsor: AFRL/VSSV.

OWENS, JEREMY J., *Final Assembly, Testing and Processing of the Rigidizable Inflatable Get-Away-Special Experiment (RIGEX) for Spaceflight Qualification*. AFIT/GA/ENY/07-S02. Faculty Advisor: Dr. Richard Cobb. Sponsor: N/A.

RICHARDS, EDWARD F., *Commercial PC Wireless for Tactical Operations*. AFIT/GSS/ENY/07-M02. Faculty Advisor: LtCol Kerry Hicks. Sponsor: NGA/IIG.

SAILSMAN, JERMAINE S., *Modeling Acoustic Effects on Shear Coaxial Jet Flow Utilizing Molecular Dynamic Simulation*. AFIT/GA/ENY/07-M16. Faculty Advisor: Major Richard D. Branam. Sponsor: AFRL/AFOSR.

SUGRUE, KIMBERLY, A., *Optimal Orbital Coverage of Theater Operations and Targets*. AFIT/GA/ENY/07-M17. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: N/A.

TOMASZEWSKI, JAMES W., *Characterization of a Hall Effect Thruster Using Thermal Imaging*. AFIT/GA/ENY/07-M18. Faculty Advisor: Major Richard D. Branam. Sponsor: AFRL/PRS.

#### **5.1.2.3. MATERIALS AND SCIENCE ENGINEERING (GMS)**

BROECKERT, JOSEPH L., *Effects of Prior Aging at Elevated Temperature in Air and in Argon Environments on Creep Response of PMR15 Neat Resin*. AFIT/GMS/ENY/07-M01. Faculty Advisor: Dr. Marina Ruggles-Wrenn. Sponsor: AFOSR/NE.

SALADIN, ERIK, C., *The Effect of Microstructure on Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GMS/ENY/07-M02. Faculty Advisor: Dr. Shankar Mall. Sponsor: AFOSR/NA.

#### **5.1.2.4. SPACE SYSTEMS (GSS)**

BITTLE, NICOLE, M., *Estimating the Aerodynamic and Heating Properties of an Unknown Reentry Vehicle Using Least Squares Filtering*. AFIT/GSS/ENY/07-M01. LtCol Kerry D. Hicks. Sponsor: N/A.

RASHASH, SANDRA M., *Radar Orbit Analysis Tool Using Least Squares Estimator*. AFIT/GSS/ENY/07-S01. Faculty Advisor: Dr. William Wiesel. Sponsor: HQ AFSPC/XPY.

#### **5.1.2.5. SYSTEMS ENGINEERING (GSE)**

ABBOTT, LAIRD, GARRETT KNOWLAN, CRAIG PHILLIPS and CHRISTIAN STILLINGS. *Systems Engineering Analysis for Transition of the Fleeting Target Technology Demonstrator*. AFIT/GSE/ENY/07-M03. Faculty Advisor: Dr. Richard Cobb. Sponsor: AFRL/SN.

ASHER, DOUGLAS W., MARK BLOMME, SHAWN COREY and ROBERT FILBEY. *Impact Analysis of Electronic Attack on Airborne Synthetic Aperture Radar*. AFIT/ISE/ENY/07J-03. Faculty Advisor: Dr. David Jacques. Sponsor: 659 AESS (ASC).

BERG, BRYAN, K., *The Application of System Engineering Techniques to the Integration of a Digital Nuclear Weapon Onto The F-15*. AFIT/GSE/ENY/07-M05. Faculty Advisor: Major Joerg Walter. Sponsor: 912 AESG/VA.

BLOMME, MARK, see ASHER, DOUGLAS W.

BOND, MATTHEW S., JAMES A. RODRIGUEZ and HIEU T. NGUYEN. *A Systems Engineering Process for an Integrated Structural Health Monitoring System*. AFIT/GSE/ENY/07M-02. Faculty Advisor: Dr. Som R. Soni. Sponsor: N/A.

CAMPBELL, JOSHUA S., STANLEY L. COOLEY, MATTHEW F. DURKIN, and BRIAN K. MADDOCKS. *Investigating Hastily-Formed Collaborative Networks*. AFIT/GSE/ENY/07-M01. Faculty Advisor: LtCol John M. Colombi. Sponsor: AFRL/AFOSR.

COREY, SHAWN, see ASHER, DOUGLAS W.

FILBEY, ROBERT, see ASHER, DOUGLAS W.

GEMAS, DAVID L., *A Systems Engineering Approach to Analyzing Weather Input Sensitivities of the Joint Precision Air Drop System*. AFIT/GSE/ENY/07J-01. Faculty Advisor: LtCol Steven T. Fiorino.

KNOWLAN, GARRET, see ABBOTT, LAIRD

MCLAUGHLIN, ANNIE, B., JESSE T. MCLAUGHLIN, JASON S. PRITCHETT, JOHN H. STONE, GREGORY K. VAN DYK. *Protection of a High-Valued Space Asset*. AFIT/GSE/ENY/07M-04. Dr. Richard Cobb. AFRL/VS.

MCLAUGHLIN, JESSE T., see MCLAUGHLIN, ANNIE B.

PHILLIPS, CRAIG, see ABBOTT, LAIRD

PRICHETT, JASON S., see MCLAUGHLIN, ANNIE B.

STILLINGS, CHRISTIAN, see ABBOTT, LAIRD

STONE, JOHN H., see MCLAUGHLIN, ANNIE B.

VANDYK, GREGORY K., see MCLAUGHLIN, ANNIE B.

### **5.1.3. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BLUE, PAUL A., Maj,**

“Planning, Guidance and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/VA.  
Funding: \$30,000. [ANT]

#### **BRANAM, RICHARD D., Maj,**

“Coaxial Rocket Injection Instability.” Sponsor: AFOSR. Funding: \$57,020.

“Development of Continuum Onset Criteria with Direct Simulation Monte-Carlo using Boltzmann’s H-Theory.” Sponsor: AFRL/VA. Funding: \$3,171.

“Error Estimation in CFD Models Based on DSMC Non-Equilibrium Modeling.” Sponsor: AFRL/VA.  
Funding: \$7,500.

#### **CANFIELD, ROBERT A.,**

“Continuous Sensitivity Equations and Multi-Point Approximations for Coupled Aero-Structural Systems.”  
Sponsor: AFOSR. Funding: \$27,306.

“Nonlinear Gust Response via Direct, Least-Squares Formulation.” Sponsor: AFRL/VA. Funding:  
\$19,112.

#### **COBB, RICHARD G.,**

“Element Set Generation Using a Commercial Telescope.” Sponsor: NASIC. Funding: \$3,000. [CSSR]

“Innovative Space Missions.” Sponsor: AFRL/VS. Funding: \$59,000. [CSSR/CSE]

#### **COLOMBI, JOHN M., Lt Col,**

“Human Systems Interface Research.” Sponsor: AFRL/HE. Funding: \$10,000. [CSE]

#### **HAVLICEK, JEFFREY D., Maj,**

“Resourcing Global Strike or Global Persistent Attack Architecture.” Sponsor: ACC. Funding: \$50,150.  
[CSE]

#### **JACQUES, DAVID R.,**

“Cooperative Control, Optimization and System Design for Autonomous Munitions.” Sponsor: AFRL/MN.  
Funding: \$25,000.

“Counter-Improvised Explosive Device (C-IED) Effort Analysis.” Sponsor: ACC. Funding: \$50,000.  
[CSE]

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: \$60,000. [CSE]

#### **KING, PAUL I.,**

“Experimental Investigation of Pylons and Cavities for Scramjet Combustors.” Sponsor: AFRL/PR.  
Funding: \$7,500.

**KUNZ, DONALD L.,**

“Dynamics Modeling and Simulation of Automated Aerial Refueling.” Sponsor: AFRL/VA. Funding: \$25,000.

“Fastrope Modeling for CV-22 Special Operations.” Sponsor: US ARMY RDECOM. Funding: \$9,444.

“High-Fidelity Aeroelastic Analysis for Flexible-Wing MAV’s.” Sponsor: AFOSR. Funding: \$18,576.

“Performance Prediction Tools for CSAR-X.” Sponsor: ASC/SOFSG. Funding: \$9,546.

**MALL, SHANKAR**

“Fretting Fatigue Behavior of Ti06Al-4V under Variable Contact Load.” Sponsor: AFOSR. Funding: \$29,039.

“Investigation into Geopolymer’s Suitability for Space Based Mirrors.” Sponsor: SAF. Funding: \$80,419.

“Nanocomposites as Lightweight Electronic Enclosures for Satellites.” Sponsor: SAF. Funding: \$94,869. [CSSR]

“Thermo-mechanical Characterization of Ceramics Matrix Composites in Combustion Environments of Gas Turbine Engines.” Sponsor: DAGSI. Funding: \$15,997.

**MAPLE, RAYMOND C., Lt Col,**

“Fluid-Structure Interaction in Low Reynolds Number Flapping Flight.” Sponsor: AFRL/VA. Funding: \$16,595.

“Support for the Beggar Flow Solver.” Sponsor: 46 SK/DKF. Funding: \$14,960.

**PALAZOTTO, ANTHONY N.,**

“Development of a New Technique for Determining the Strain Dependent Damping and Stiffness Characteristics of Hard Coatings.” Sponsor: AFRL/PR. Funding: \$13,000.

“Effects of High Energy Impact.” Sponsor: AFRL/MN. Funding: \$12,500.

“Evaluation of Nonlinear Movement in Micro Air Vehicles.” Sponsor: AFRL/VA. Funding: \$18,700.

“Functionally Graded Material (FGM).” Sponsor: AFRL/VA. Funding: \$15,000.

“Hypervelocity Impact Gouge Mitigation and Wear Predication.” Sponsor: AFOSR. Funding: \$95,000.

“Investigation of the Response of Functionally Graded Plates and Shells Subject to High-Velocity Impact Events in Extreme Environments.” Sponsor: DAGSI. Funding: \$20,160.

“Thermal Evaluations of Polymers.” Sponsor: AFRL/ML. Funding: \$5,000.

**REEDER, MARK F.,**

“Characterization of Flapping-Wing Micro Air Vehicle Kinematics.” Sponsor: AFRL/VA. Funding: \$30,000.

“Continued Investigation of ‘Clean Seeding’ Methods for Particle Imaging Velocimetry in Closed Circuit Wind Tunnels. Sponsor: AFRL/VA. Funding: \$12,500.

“Feasibility of Using Dry Ice for Seed Particles in Closed Circuit Wind Tunnels.” Sponsor: AFRL/VA. Funding: \$12,500.

“Turbine Blade Heat Transfer Characteristics.” Sponsor: AFRL/PR. Funding: \$4,000.

**RUGGLES-WRENN, MARINA B.,**

“Effect of Aging on Creep Behavior of a High-Temperature Polymer at 288° C.” Sponsor: AFRL/ML. Funding: \$7,000.

“Effect of Monazite Coating on Creep Behavior of Two Oxide-Oxide Ceramic Composites at Elevated Temperatures.” Sponsor: AFRL/PR. Funding: \$6,966.

“Effects of Physical Aging and Chemical Degradation on Mechanical Behavior of High-Temperature Polymer Matrix Composites.” Sponsor: AFOSR. Funding: \$32,022.

“Evaluation of Discontinuities in Functionally Graded Structures.” Sponsor: AFRL/VA. Funding: \$2,500.

**SHEARER, CHRISTOPHER M., Maj,**

“Flight Dynamics and Control of High Altitude Long Endurance Sensorcraft.” Sponsor: AFRL/VA. Funding: \$10,000. [ANT]

**SONI, SOM R.,**

“Assessment of Nondestructive Signal Responses from Damaged Materials.” Sponsor: DAGSI. Funding: \$20,160.

“F-15 Bulkhead FEA for Failure Predictions.” Sponsor: AFRL/ML. Funding: \$50,000.

**WALTER, JOERG D., Maj,**

“F-15 E/System 2 Nuclear Weapon Integration Architecture.” Sponsor: F15SG. Funding: \$9,898.

“Impacts of Uninhabited Operation on Long-Range Strike Aircraft.” Sponsor: AFRL/VA. Funding: \$15,000. [CSE]

**5.1.4. FUNDED EDUCATIONAL PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

**WALTER, JEORG, Maj**

“SENG 585NC.” Sponsor: AFOTEC. Funding: \$49,725. [CSE]

### 5.1.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BLACK, JONATHAN T.**

Black, J. T., Leifer, J., DeMoss, J. A., and Walker, E. N., "Experimental and Numerical Correlation of Gravity Sag in Solar Sail Quality Membranes," *Journal of Spacecraft and Rockets*, Vol. 44, No. 3, May-June 2007, pp. 522-527.

#### **CANFIELD, ROBERT A.,**

Lee, H.A., Kim, Y.I., Park, G.J., Kolonay, R.M., Blair, M., and Canfield, R.A., "Structural Optimization of a Joined Wing Using Equivalent Static Loads," *Journal of Aircraft*, Vol. 44, No. 4, July-Aug. 2007, pp.1302-1308.

#### **COBB, RICHARD G.**

Shepherd, M. J., Cobb, R. G., Peterson, G. A. and Palazotto, A.N., "Quasi-static Optics-based Surface Control of an In-plane Actuated Membrane Mirror" *Journal of Spacecraft and Rockets*, Vol. 44, No. 4, July 2007, pp. 953-963. [CSSR]

R. Vanderwaker, A. Palazotto and R. Cobb," Damage Detection Through Analysis of Modes and Partially Constrained Plates", *J. Aerospace Engineering, ASCE*, Vol. 20, No. 2, April 2007, pp. 90-94.

#### **FRANKE, MILTON E.**

Wierschke, K. W., Franke, M. E., Watts, R., and Ponnappan, R., "Heat Dissipation with Pitch-Based Carbon Foams and Phase-Change Materials." *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 20, No. 4, October-December 2006, pp. 865-870.

#### **KUNZ, DONALD L.**

Smith, A.L. and Kunz, D.L., "Dynamic Coupling of the KC-135 Tanker and Boom for Modeling and Simulation," *Journal of Aircraft*, Vol. 44, No. 3, May-June 2007, pp. 1034-1039.

Leigh, E.J. and Kunz, D.L., "Simulation of a Moving Elastic Beam Using Hamilton's Weak Principle," *AIAA Journal*, Vol. 45, No. 2, February 2007, pp. 471-476.

#### **KING, PAUL I.,**

Millman, D.R., King, P.I., Maple, R.C., Beran, P.S. and Chilton, L.K., "Uncertainty Quantification with a B-Spline Stochastic Projection," *AIAA Journal*, Vol. 44, No. 8, 2006, pp. 1845-1853.

#### **MALL, SHANKAR**

Sabelkin, V. and Mall, S., "Relative slip on Contact Surface under Partial Slip Fretting Fatigue Condition", *Strain*, 42, 11-20, 2006.

Sabelkin, V. and Mall, S., and Avram, J. B., "Fatigue Crack Growth Analysis of Stiffened Cracked Panel Repaired with Bonded Composite Patch", *Engineering Fracture Mechanics*, 73, 1553-1567, 2006.

Wang, R. H., Jain, V. K., Mall, S. and Sabelkin, V., "Enhancement of Fretting Fatigue Strength through Stress-Relieving Slot", *Mechanics Based Design of Structures and Machines*, 34, 113-138, 2006.

Ruggles-Wrenn, M. B., Musil, S. S., Mall, S. and Keller, K. A., "Creep-Rupture Behavior of Nextel<sup>TM</sup>610/ Monazite/Alumina Composite at Elevated Temperatures", *Composites Science and Technology*, Vol. 66, 2089-2099, 2006.

- Ruggles-Wrenn, M. B., Mall, S., Eber, C. A. and Harlan, L. B., "Effects of Steam Environment on High-Temperature Mechanical Behavior of Nextel™720/ Alumina (N720/A) Continuous Fiber Ceramic Composite", *Composites Part A: Applied Science and Manufacturing*, Vol. 37, 2029-2040, 2006.
- Lee, H., Mall, S., Nalladega, V., Sathish, S., Lafdi, K. and Ajit, R., "Characterization of Carbon Nanofiber Reinforced Epoxy Composites using Nanoindentation and AFM/UFM Techniques," *Polymer & Polymer Compos.*, Vol. 14, 549-562, 2006.
- Wong, S. C., Lee, H., Qu, S., Mall, S. and Chen, L., "A Study of Global vs. Local Properties for Maleic Anhydride Modified Polypropylene Nanocomposites," *Polymer*, Vol. 47, 7477-7484, 2006.
- Hutson, A., Lee, H. and Mall, S., "Effect of Dissimilar Metals on Fretting Fatigue Behavior of Ti-6Al-4V," *Tribol. Int.*, Vol. 39, 1187-1196, 2006.
- Lee, H. and Mall, S., "Investigation into Effects and Interaction of Various Fretting Fatigue Variables under Slip Controlled Mode," *Tribol. Int.*, Vol. 39, 1213-1219, 2006.
- Lee, H., Mall, S., Sathish, S. and Blodgett, M. P., "Evolution of Residual Stresses in a Stress-Free Titanium Alloy Subjected to Fretting Fatigue," *Mater. Lett.*, Vol. 60, 2222-2226, 2006.
- Lee, H. and Mall, "Investigation into Tangential Force and Axial Stress Effects on Fretting Fatigue Behavior," *J. Eng. Mater. & Tech.*, Vol. 128, 202-209, 2006.
- Lee, H., Mall, S. and Allen, W. Y., "Fretting Fatigue Behavior of Shot-peened Ti-6Al-4V under Seawater Environment," *Mater. Sci. Eng. A*, Vol. 420, 72-78, 2006.
- Lee, H. and Mall, S. "Fretting Fatigue Behavior of Shot peened Ti-6Al-4V under Slip Controlled Mode," *Wear*, Vol. 260, 642-651, 2006.
- Lee, H., Mall, S., Coutu Jr., R. A. and Leedy, K., "Characterization of Metal and Metal Alloy Films as Contact Materials in MEMS Switches," *J. Micromech. Microeng.*, Vol. 16, 557-563, 2006.
- Jin, O., Calcaterra, R. J. and Mall, S., "Life Predication of Fretting Fatigue of Ti-6Al-4V", *Journal of ASTM International*, Vol. 3, 2006.
- Jin, O., Mall, S., Sanders, J. H. and Sharma, S. K., "Durability of Cu-Al Coating on Ti-6Al-4V Substrate under Fretting Fatigue", *Surface and Coatings Technology*, Vol. 201, 1704-1710, 2006.
- Mall, S. and LaRochelle, K. J., "Fatigue and Stress-Rupture Behaviors of SiC/SiC Composite under Humid Environment at Elevated Temperature", *Composites Science and Technology*, Vol.66, 2925-2934, 2006.
- Mall, S. and Engesser, J. M., "Effects of Frequency on Fatigue Behavior of CVI C/SiC at Elevated Temperature", *Composites Science and Technology*, Vol. 66, 863-874, 2006.
- Kang, I., Yeo, Y. Y., Kim, J. H., Lee, J. W., Gollapudi, W., Subramaniam, S., Narasimhadevara, S., Hurd, D., Kirikera, G. R., Shanov, V., Schulz, M.J., Shi, D., Boerio, J., Mall, S. and Ruggles-Wren, M., "Introduction to Carbon Nanotube and Nanofiber Smart Materials," *Composites: Part B*, Vol. 37, 382-394, 2006.

**MAPLE, RAYMOND C., LtCol,**

- Parker, G. H., Maple, R. C., and Beran, P. S., "Computational Aeroelastic Analysis of Store-Induced Limit-Cycle Oscillation", *Journal of Aircraft* 44(1): 48-59, Jan-Feb 07.

**PALAZOTTO, ANTHONY N.**

- Cinnamon, J. and A. Palazotto, "Further Validation of a General Approximation for Impact Penetration Depth Considering Hypervelocity Gouging Data", *Intl Journal of Impact Engineering*, Vol 34, pp 1307-1326, 2007.
- Pai, F. and A. Palazotto, "Two Dimensional Sublamination Theory for Analysis of Functionally Graded Plates", *Journal of Sound and Vibration*, Vol. 308, pp 164-189, 2007.
- Yun, S. and A. Palazotto, "Damage Mechanics Incorporating Two Back Stress Kinematic Hardening Constitutive Models", *Journal of Engineering Fracture Mechanics*, Vol. 74, pp 2844-2863, 2007.
- Cinnamon, J. and A. Palazotto, "Further Validation of a General Approximation for Impact Penetration Depth Considering Hypervelocity Gouging Data", *Intl Journal of Impact*, Vol.34, pp 1307-1326., 2007.
- Vanderwaker, R., A. Palazotto and R. Cobb, "Damage Detection Through Analysis of Modes and Partially Constrained Plates", *J. Aerospace Engineering*, ASCE, Vol.20, No.2, pp 90-94, April, 2007.
- Blackwell, C., A. Palazotto, T. George and C. Cross, "The Evaluation of the Damping Characteristics of a Hard Coating on Titanium", *J. Shock and Vibration*, Vol.14, pp 37-51, 2007.
- Cinnamon, J. , A. Palazotto, A. Szmerekovsky and R. Pendleton, "Investigation of Scaled Hypervelocity Gouging Model and Validation of Material Constitutive Models", *AIAA Journal*, Vol.45, No.5, pp 1104-1112, 2007.
- Shepherd, M. R. Cobb, G. Peterson and A. Palazotto, "Quasi- Static Optics-Based Surface Control of an In-Plane Actuated Membrane Mirror", *Journal of Spacecraft and Rockets*, Vol. 44, No.4 ,pp 953-963.

**REEDER, MARK F.**

- Gebbie, D., Reeder, M.F, Tyler, C., Fonov, V., and Crafton, J., 'Lift and Drag Characteristics of a Blended Wing Body Aircraft', *AIAA Journal of Aircraft*, Vol. 44, No. 5, pp. 1409-1421, September 2007.

**RUGGLES-WRENN, MARINA B.**

- Ruggles-Wrenn, M.B., Siegert, G.T., and S. S. Baek, "Creep Behavior of Nextel™720/Alumina Ceramic Composite with  $\pm 45^\circ$  Fiber Orientation at 1200 °C", *Composites Science and Technology*, in press, available on journal website 1 August 2007.
- Ruggles-Wrenn, M.B., Hetrick, G., and S. S. Baek, "Effects of Frequency and Environment on Fatigue Behavior of an Oxide-Oxide Ceramic Composite at 1200 °C", *International Journal of Fatigue*, in press, available on journal website 27 April 2007.
- Ruggles-Wrenn, M.B., and J. G. Balaconis, "Some Aspects of the Mechanical Response of BMI 5250-4 Neat Resin at 191°C: Experiment and Modeling", *Journal of Applied Polymer Science*, Vol. 107, No. 3, 2008, pp. 1378-1386.
- Jackson, P.R., Ruggles-Wrenn, M.B., Baek, S.S., and K. A. Keller, "Compressive Creep Behavior of an Oxide-Oxide Ceramic Composite with Monazite Fiber Coating at Elevated Temperatures", *Materials Science and Engineering A*, Vol. 454-455, 2007, pp. 590-601.
- Mehrman, J.M., Ruggles-Wrenn, M.B., and S. S. Baek, "Influence of Hold Times on the Elevated-Temperature Fatigue Behavior of an Oxide-Oxide Ceramic Composite in Air and in Steam Environment", *Composites Science and Technology*, Vol. 67, No. 7-8, 2007, pp. 1425-1438.

**SHEARER, CHRISTOPHER M., Maj,**

Shearer, C.M. and Cesnik, C.E.S., "Nonlinear Flight Dynamics of Very Flexible Aircraft", *AIAA Journal of Aircraft* 44(5):1528-1545, September-October 2007.

**TORVIK, PETER J.**

Torvik, P. J. and B. Runyon, "Modifications to the Method of Modal Strain Energy for Improved Estimates of Loss Factors for Damped Structures," *Shock and Vibration*, Vol. 14, No. 5, pp. 339-353, September 2007.

Torvik, P. J. and B. Runyon, "Estimating the Loss Factors of Plates with Constrained Layer Damping," *AIAA Journal*, Vol. 45, No. 7, pp.-1492-1500, July 2007.

Torvik, P. J., "Analysis of Free-layer Damping Coatings," *Key Engineering Materials*, Vol. 333, pp, 195-214, 2007.

**5.1.6. REFEREED CONFERENCES**

Note: Research Center affiliations are listed in [ ] if applicable.

**CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**

**BLUE, PAUL A., Maj,**

Burns, B., Blue, P., and M. Zollars: "Autonomous Control for Automated Aerial Refueling with Minimum-time Rendezvous", Proceedings of the AIAA Guidance, Navigation, and Control Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Optimal Wind Corrected Flight Path Planning for Micro Air Vehicles with a Dual Sensor Configuration", Proceedings of the AIAA Guidance, Navigation, and Control Conference, Hilton Head, SC, August 2007. [ANT]

**COBB, RICHARD G.**

Shepherd, M.J., Cobb, R.G., Palazotto, A.N. , and Baker, W. P., "Scaling Analysis for Large Membrane Optics ," IEEE Aerospace Conference, Big Sky MT, Mar 2007. [CSSR]

**HICKS, KERRY D., LtCol,**

Richards, E.F., Temple, M.A., and Hicks, K.D., "Commercial 802.11 Wireless Link for Tactical Air-to-Ground Military Communications," 2007 Military Communications Conference (MILCOM 2007), Orlando, FL, 29-31 October 2007.

**RUGGLES-WRENN, MARINA B.**

Siegert, G.T., Ruggles-Wrenn, M.B., and S.S. Baek, "Effects of Environment on Creep Behavior of an Oxide-Oxide Ceramic Composite with  $\pm 45^\circ$  Fiber Orientation at 1200 °C", Proceedings of the 31<sup>st</sup> International Cocoa Beach Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach FL, January 2007.

Hetrick, G., Ruggles-Wrenn, M.B., and S.S. Baek, "Effects of Frequency on Fatigue Behavior of an Oxide-Oxide Ceramic Composite at 1200 °C", Proceedings of the 31<sup>st</sup> International Cocoa Beach Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach FL, January 2007.

Mehrman, J.M., Ruggles-Wrenn, M.B. and S.S. Baek, "Effect of Hold Times on Fatigue Behavior of Nextel<sup>TM</sup>720/Alumina (N720/A) Ceramic Matrix Composite at 1200 °C in Air and in Steam Environment", Proceedings of the Materials Science and Technology (MS&T) 2006 Conference and Exhibition, Cincinnati, OH, October 2006, Vol. 1, pp. 17-28.

**TORVIK, PETER J.**

Torvik, P., R. Willson and J. Hansel, "Influence of a Viscoelastic Surface Infiltrate on the Damping Properties of Plasma Sprayed Alumina Coatings Part I: Room Temperature," *Proceedings, Materials Science & Technology 2007 Conference and Exhibit (MS&T '07)*, Detroit, September 16-20, 2007.

Torvik, P., R. Willson, J. Hansel, and J. Henderson, "Influence of a Viscoelastic Surface Infiltrate on the Damping Properties of Plasma Sprayed Alumina Coatings Part II: Effects of Elevated Temperature and Static Strain," *Proceedings, Materials Science & Technology 2007 Conference and Exhibit (MS&T '07)*, Detroit, September 16-20, 2007.

**CONFERENCE PAPERS ACCEPTED ON THE BASIS OF REVIEWED ABSTRACT**

**BLACK, JONATHAN T.**

Black, J., Smith, S.W., Leifer, J., and L. Bradford, "Experimental Characterization and Modeling of Global Behavior of Semi-Rigid Thin Film Polyimide Panels," 48th AIAA/ASME/ASCE/AHS/ASC Conference on Structures, Structural Dynamics and Materials, 8th Gossamer Spacecraft Forum, Waikiki, HI, April 2007, AIAA Paper 2007-1833.

**BLUE, PAUL A.,**

Burns, B., Blue, P., and M. Zollars: "Simulation of a Real-time Trajectory Generator for Automated Aerial Refueling with a Required Time of Arrival", Proceedings of the AIAA Modeling and Simulation Technologies Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Wind Corrected Flight Path Planning for Autonomous Micro Air Vehicles Utilizing Optimization Techniques", Proceedings of the AIAA Atmospheric Flight Mechanics Conference, Hilton Head, SC, August 2007. [ANT]

**BRANAM, RICHARD D., Maj**

Carr, R., Camberos, J. and Branam, R., "Modifying the Continuum Constitutive Relations for Non-Equilibrium Using Entropy Generation," DSMC: Theory, Methods and Applications, Sante Fe, NM 30 Sep - 3 Oct, 2007.

Jantz, B., R. Branam and L. Brieda, "TacSat-2 Surface Erosion and Contamination by a 200 W Hall Effect Thruster," 54th JANNAF Propulsion Meeting, Denver, CO 14 – 18 May, 2007.

Greatting, H. and R. Branam, "Analysis and Maneuvering of a Microsatellite," 54th JANNAF Propulsion Meeting, Denver, CO 14 – 18 May, 2007.

Sailsman, J. and R. Branam, "Modeling Acoustic Effects on Coaxial Shear Injection Jet Flow using Molecular Dynamics Techniques," AIAA Aerospace Sciences Conference, Reno, NV 8-11 Jan 2007.

Tomaszewski, J. and R. Branam, "Characterization of a Hall Effect Thruster Using Thermal Imaging," AIAA Aerospace Sciences Conference, Reno, NV 8-11 Jan 2007.

Carr, R., R. Branam and J. Camberos. "Quantifying Non-Equilibrium Using Entropy Generation," AIAA Aerospace Sciences Conference, Reno, NV 8-11 Jan 2007.

Carr, R. R. Branam and J. Camberos. "Quantifying Nonequilibrium with Boltzmann's H-Theorem with Applications to High-Speed Flow," 14th AIAA/AHI Space Planes & Hypersonic Systems Conference, Canberra, Australia, 06–09 Nov 2006.

**CANFIELD, ROBERT A.**

Rasmussen, C., Canfield, R.A.; and Reddy, J.N. , "Least-Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," AIAA Paper 2007-2407, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Dreher, P., and Canfield, R. A. , "Experimental Dynamic Response of a Munition Impacting a Low Pressure Airbag," AIAA Paper AIAA-2007-2024, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Westfall, J. and Canfield, R. A., "Multi- Disciplinary Optimization of a Distributed Actuation System in a Flexible Morphing Wing," AIAA Paper 2007-1715, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Blair, M., Garmann, D., Canfield, R. A.; Bond, Vanessa; Pereira, Pedro; and Suleman, Afzal, "Non- Linear Aeroelastic Scaling of a Joined- Wing Concept," AIAA Paper 2007-1887, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Suleman, A., Pereira, P., Almeida, L., Canfield, R.A., Bond, V., and Blair, M., "Aeroelastic Scaling and Optimization of a Joined- Wing Aircraft Concept," AIAA Paper 2007-1889, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Bond, V., Canfield, R. A.; Matos, M., Suleman, A., and Blair, M., "Wind Tunnel Testing of a Twisted Wing for Longitudinal Control in a Joined Wing Aircraft," AIAA Paper 2007-1772, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

Roberts, R., and Canfield, R. A., "Large Scale Optimization Using Multipoint Cubic Approximation," AIAA Paper 2007-1929, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Waikiki, Hawaii, April 23–26, 2007

**COBB, RICHARD G.**

Irvin, D. R., Cobb, R.G., and Lovell, T. A., "A General Methodology For Minimum-Fuel Hovering Satellite Formations." AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-271. [CSSR]

Jorris, T. R. and Cobb, R.G., "3-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints." AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-304. [CSSR]

Irvin, D. R. and Cobb, R. G. "Multiple Leg Fuel-Optimal Trajectories for Hovering Satellites " AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007 AAS 07-209. [CSSR]

Jorris, T. R. and Cobb, R.G., "2-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints." AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007, AAS 07-114. [CSSR]

**FRANKE, MILTON E.**

In, W., Franke, M. E., Stephen, E. J., and Reeder, M. F., "Aerodynamic Ground Effects of Tailless Chevron- and Lambda-Shaped UCAV Models," Paper No. AIAA-2007-0676, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2007.

Wall, J. D., Boxx, I. C., Rivir, R. B., and Franke, M. E., "Effects of Pulsed-D.C. Discharge Plasma Actuators in a Separated Low Pressure Turbine Boundary Layer," Paper No. AIAA-2007-0942, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2007.

Wilson, P. M., and Franke, M. E., "Simulation of Airdropped Munitions Dispenser System," Paper No. AIAA-2007-2548, 19th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, Williamsburg Lodge, Williamsburg, VA, 21-24 May 2007.

**KUNZ, DONALD L.**

Smith, J.J. and Kunz, D.L., "Simulation of the Dynamically Coupled KC-135 Tanker and Refueling Boom," AIAA-2007-6711, AIAA Modeling and Simulation Technologies Conference and Exhibit, Hilton Head, South Carolina, August 2007.

Schulz, C.S., Kunz, D.L., and Wereley, N.M., "Cramer-Rao Bound Development for Linear Time Periodic Systems," AIAA-2007-1330, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Honolulu, Hawaii, April 2007.

**MALL, SHANKAR**

Mall, S. and Ryba, J. L., "Fiber/Matrix Interphase Degradation in SiC/SiC Ceramic Matrix Composite under Humid Environment", Proceedings of the American Society for Composites 2006 Conference, Detroit, MI, Sept. 15-18, 2006.

Mall, S., Lee, H., Leedy, K. D., Coutu, Jr, R. A., " Interrelationship between Hardness and Resistivity of Metal Alloy Films as Contact Materials in MEMS Switches, Proceedings of STLE/ASME Joint Tribology Conference, October 23-25, 2006, San Antonio, TX

Mall, S. and Ryba, J. L., "Humidity Effects on Woven Ceramic Matrix Composites", Proceedings of International Conference on Technical Textiles, New Delhi, India, Nov. 11- 14, 2006 (**INVITED TALK**)

Yun, Y. Y., Shanov, V., Balaji, S., Tu, Y., Yarmolenko, S., Neralla, S., Sankar, J., Mall, S., Lee, H., Burggraf, L. W., Li, G., Sabelkin, V. and Schulz, M. J., "Developing a Sensor, Actuator, and Nanoskin Based on Carbon Nanotube Arrays," Proceedings of SPIE Smart Structures and NDE Conference, March 2007, San Diego, CA

Mall, S. and Lee, H., Investigation into Wear Behavior of Cu-Al Coating on Titanium alloy under Fretting Fatigue", Proceeding of AIAA/ASME/ASCE/AHS/ASC, Structures, Structural Dynamics and Material Conference, 21- 28 April 2007, Honolulu, HI.

**PALAZOTTO, ANTHONY N.**

Voyiadjis, G., A. Abed and A. Palazotto, Simulation of the Micromechanics of Localized Damage and Fracture in Solids at High Speed Impact", 11th International Symposium on Continuum Models and Discrete Systems, Paris, France July 28-31, 2007.

Cinnamon, J. and A. Palazotto, " Analysis and Simulation of Hypervelocity Gouging Impacts for a High Speed Sled Test", Presented at the AIAA/ASME SDM conference , Honolulu, Hawaii, April, 23-26, 2007 , paper # AIAA 2007-1999.

Pai, F. and A. Palazotto, "Two-Dimensional Sublamination Theory for the Analysis of Functionally Graded Plates", Presented at the AIAA/ASME SDM conference, Honolulu, Hawaii, April, 23-26, 2007, paper #AIAA 2007-2109.

Palazotto, A., "Research on the Consideration of Wear at Holloman AFB", AFOSR Contractor meeting, Washington, DC, August, 15, 2007, Contract monitor Dr John Schmisser.

Reed, S. and A. Palazotto, "Strain Dependent Material Properties of Hard Coatings", Proceedings of the 2007 ASME Intl. Mechanical Engineering Congress and Exposition, November, 7-12, 2007 Seattle WA, paper # IMECE 2007-14003.

Vanderhyde, M. and A. Palazotto, "Comparison of Thermodynamic Equilibrium and Nonequilibrium Representation", ASCE 18th Engineering Mechanics Division Conference, Blacksburg, VA, June, 3-6, 2007.

Larson, R. and A. Palazotto, "Initial Wave Propagation in Functionally Graded Circular Plates", ASCE 18th Engineering Mechanics Division Conference, Blacksburg, VA, June, 3-6, 2007.

Voyiadjis, G., Abud Al-Rub and A. Palazotto, "Simulation of the Micromechanics of Localized Damage and Fracture in Solids at High Speed Impact", 9th U. S. National Congress on Computational Mechanics, San Francisco, CA. July 9-15, 2007.

#### **REEDER, MARK F.**

Polanka, M., Gillaugh, T., Anthony, R., Umholtz, M. and M. Reeder, "Comparisons of Three Cooling Techniques in a High Speed, True Scale, Fully Cooled Turbine Vane Ring", AIAA Paper 2007-5097, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cincinnati, OH, July 9-11, 2007.

McNiel, C.M., Peltier, D.W., Reeder, M.F., and J. W. Crafton, "Clean Particle Seeding for Particle Image Velocimetry", Proceedings of the 22nd International Congress on Instrumentation in Aerospace Simulation Facilities, June 10-14th, 2007, Asilomar Conference Center, Pacific Grove, CA.

McGaha, C. and Reeder, M., "Filtered Rayleigh Scattering-Based Concentration Measurements for a Horizontal Buoyant Jet", Proceedings of the 22nd International Congress on Instrumentation in Aerospace Simulation Facilities, June 10-14th, 2007, Asilomar Conference Center, Pacific Grove, CA.

Reeder, M., Allen, W., Phillips, J., and R. Dimmick, "Wind Tunnel Measurements of the E-8C Modeled With and Without Winglets", AIAA-2007-1633, U.S. Air Force Test and Evaluation Days, Destin, Florida, Feb. 13-15, 2007.

In, W., Franke, M. E., Stephen, E. J., and Reeder, M. F., "Aerodynamic Ground Effects of Tailless Chevron- and Lambda-Shaped UCAV Models", Paper No. AIAA-2007-0676, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, 8-11 January 2007.

#### **TITUS, NATHAN A., LtCol,**

Baldwin, J. and Titus, N.A., "Optimal Control of a Circular Spacecraft Formation Subject to Gravitational Perturbation," AAS/AIAA Spaceflight Mechanics Conference, Sedona, AZ, January 2007.

Gargas, M.L., and Titus, N.A., "Spacecraft Attitude Control Using Aerodynamic Torques," AAS/AIAA Spaceflight Mechanics Conference, Sedona, AZ, January 2007.

**TORVIK, PETER J.**

Nashif, A., P. Torvik, U. Desai, J. Hansel, and J. Henderson, "Increasing Blade Damping through Inclusion of Cavities filled with Viscoelastic Materials," AIAA-2007-5037, 43rd IAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cincinnati, Ohio, 8-11 July 2007.

Torvik, P. J., "A Survey of the Damping Properties of Hard Coatings for Turbine Engine Blades," *Integration of Machinery Failure Prevention Technologies into System Health Management*, Society for Machine Failure Prevention Technology (MFPT), Dayton, OH, pp 485-506, 2007.

**WIESEL, WILLIAM E.**

Wiesel, W. E., "Earth Satellite Orbits as KAM Tori", AAS paper 07-423. Presented at the AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, MI, August 2007.

Wiesel, W. E., "KAM Orbits in an Axisymmetric Gravity Field", AAS paper 07-422. Presented at the AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, MI, August 2007.

**5.1.7. BOOKS AND CHAPTERS IN BOOKS**

**CANFIELD, ROBERT A.**

Choi, Seung-Kyum, Grandhi, Ramana V., and Canfield, Robert A. *Reliability-Based Structural Design*, London: Springer-Verlag, 2006.

**5.1.8. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

**BLACK, JONATHAN T.**

Black, J.T., Smith, S.W., and J. Leifer, "Reduced Model Validation of Thermal-Formed Polyimide Panels," 25th International Modal Analysis Conference, Model Validation Methods Special Session, Orlando, FL, Feb. 2007.

**BLUE, PAUL A., Maj,**

Zollars, M. and P. Blue: "Optimal Wind Corrected Flight Path Planning", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

Rufa, J. and P. Blue: "Development of Experimental Autonomous Target Recognition System", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

Burns, B. and P. Blue: "Trajectory Optimization for Automated Aerial Refueling (AAR)", AIAA Dayton-Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 2007.

**BRANAM, RICHARD D., Maj,**

Branam, R., "Dual Expander Aerospike Nozzle," NPSS Working Group Meeting at the 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH, 8-11 July, 2007.

**CANFIELD, ROBERT A.**

Organizing Committee, 2<sup>nd</sup> Annual ASME Dayton Engineering Sciences Symposium, 2006

Bond, Vanessa; Canfield, Robert A.; Madruga Santos Matos, Maria da Luz; Suleman, Afzul; and Blair, Maxwell, "Wind Tunnel Testing of Twisted Wing for Longitudinal Control in a Joined Wing Aircraft," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Dittmar, Josh; and Canfield, Robert A., "Integrated Conceptual Design of Joined-Wing Sensor-Craft Using Response Surface Models," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Rasmussen, Cody; and Canfield, Robert A., "The Least Squares Finite Element Method Applied to Fluid-Structure Interaction Problems," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Westfall, James; Canfield, Robert A.; Joo, James J.; and Sanders, Brian, "Multi-Disciplinary Optimization of a Distributed Actuation System in a Flexible Morphing Wing," 2nd Annual ASME Dayton Engineering Sciences Symposium, Dayton, Ohio, 30 October 2006

Bond, Vanessa L.; Canfield, Robert A.; Madruga, Maria da Luz; Suleman, Afzul Suleman; and Blair, Maxwell, "Wind Tunnel Testing for Pitch Control in a Twisted Joined Wing Aircraft," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Dreher, Ronald, and Canfield, Robert A., "Dynamic Response of Low Pressure Airbags," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Rasmussen, Peter A., and Canfield, Robert A., "The Least Squares Finite Element Method Applied To Fluid Structure Interaction Problems," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

Roberts, Ronald, and Canfield, Robert A., "Large Scale Optimization Using Multipoint Cubic Approximation," AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 6 March 2007

#### **COBB, RICHARD G.**

Session Chair: 32nd Dayton-Cincinnati Aerospace Sciences Symposium

Technical Paper Referee: AIAA Journal and AIAA Journal of Spacecraft and Rockets

Conference Paper Referee: AIAA Structures, Structural Dynamics and Materials (SDM) Conference

#### **KUNZ, DONALD L.**

Kunz, D.L., "Coupled Equations of Motion for the KC-135 Refueling Boom," Air Force Institute of Technology, AFIT/EN/TR-07-01, December 2006.

#### **LIEBST, BRADLEY S.**

Liebst, Bradley S., "How Universities Teach About Our Shared Dependency on Space", Invited presentation and panel member for the 2007 Space Education Symposium, Montgomery, AL, 26 September 2007.

#### **MAPLE, RAYMOND C., LtCol,**

Doster, J., King, P., Gruber, M., and Maple, R., "Pylon Fuel Injector Design for a Scramjet Combustor," AIAA 2007-5404, 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH July 8-11, 2007.

Caspers, M., Maple, R.C., and Disimile, P., "CFD Investigation of Flow Past Idealized Engine Clutter," AIAA-2007-3825 18th AIAA Computational Fluid Dynamics Conference, Miami, FL, June 25-28. 2007

McClung, A., Maple, R.C., and Beren, P., "A Comparison of Overset Methods and Unstructured Remeshing for Modeling Large Rigid Body Motion," AIAA 2007-0327, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007

Caspers, M., Maple, R.C., and Disimile, P., "CFD Investigation of Flow Past Idealized Engine Clutter," presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

**PALAZOTTO, ANTHONY N.**

Reed, S. and Palazotto, A.N., "Material Property Extraction from a Novel Free Decay Experiment", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Larson, R. and Palazotto, A.N., "Analysis of Wave Propagation in Functionally Graded Circular Plates Under Impact Loading", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007. Best Paper Award.

Cameron, G. and Palazotto, A.N., "Technique for Evaluating Hypervelocity Wear", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Vanderhyde, M. and Palazotto, A.N., "Comparison of Thermodynamic Equilibrium and Nonequilibrium Representations of Materials behind Shock Waves", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Walker, R. and Palazotto, A.N., "Analytical Solution to Nonlinear Flapping Beams for Use with Micro Air Vehicle Design", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

Andrews, J. and Palazotto, A.N., "Lamb Wave Propagation in Varying Thermal Environments", presented at the 32<sup>nd</sup> Annual Dayton-Cincinnati Aerospace Science Symposium, March 6, 2007.

**TORVIK, PETER J.**

Torvik, P. J., and J., Hansel "Experimental and Analytical Determinations of the Damping of VEM Filled Blades," *Proceedings: Propulsion-Safety and Affordable Readiness (P-SAR) Program Review*, San Diego, CA, March 13-15, 2007. (Limited Distribution).

Torvik, P. J., *Material Properties of Plasma Sprayed Alumina-NiCrAlY Coatings*, AFRL WS-07-0362, Universal Technology Corporation, (28 pages), December 2006.

**RUGGLES-WRENN, MARINA B.**

Ruggles-Wrenn, M.B., Koutsoukos, P. and S.S. Baek, "Effects of Environment on Creep Behavior of Two Oxide-Oxide Ceramic Matrix Composites at 1200 °C", Invited Plenary Lecture presented at the Third Key Euro-USA Conference *Stretching the Endurance Boundary of Composite Materials: Pushing the Performance Limit of Composite Structures*, Madeira, Portugal, September 23-28, 2007.

**WIESEL, WILLIAM E.**

Secretary, Honors Society of Metropolitan Dayton. Made two presentations to area high school students, served as corporation secretary.

## **5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

Access Phone: 937-255-2024, DSN 785-2024

Fax: 937-656-7061, DSN 986-7061

Homepage: <http://www.afit.edu/en/eng/>

|               |                                                                             |            |
|---------------|-----------------------------------------------------------------------------|------------|
| <b>5.2.1</b>  | <b><u>DOCTORAL DISSERTATIONS</u></b>                                        | <b>70</b>  |
| <b>5.2.2</b>  | <b><u>MASTER'S THESES</u></b>                                               | <b>71</b>  |
| <b>5.2.3</b>  | <b><u>GRADUATE RESEARCH PAPERS</u></b>                                      | <b>75</b>  |
| <b>5.2.4</b>  | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                      | <b>77</b>  |
| <b>5.2.5</b>  | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>                                   | <b>80</b>  |
| <b>5.2.6</b>  | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                 | <b>80</b>  |
| <b>5.2.7</b>  | <b><u>REFEREED CONFERENCES</u></b>                                          | <b>86</b>  |
| <b>5.2.8</b>  | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                     | <b>99</b>  |
| <b>5.2.9</b>  | <b><u>BOOKS &amp; CHAPTERS IN BOOKS</u></b>                                 | <b>101</b> |
| <b>5.2.10</b> | <b><u>PATENTS</u></b>                                                       | <b>101</b> |
| <b>5.2.11</b> | <b><u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>101</b> |

### 5.2.1. DOCTORAL DISSERTATIONS

EDGE, KENNETH S., *A Framework for Analyzing and Mitigating the Vulnerabilities of Complex Systems via Attack and Protection Trees*. AFIT/DS/ENG/07-13. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

FORMWALT, BYRON P., *Modeling, Simulation, and Estimation of Optical Turbulence*, AFIT/DS/ENG/07-04. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

JOHNSON, PETER M., *Phase Diversity and Polarization Augmented Techniques for Active Imaging*. AFIT/DS/ENG/07-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/DESA.

MANN, CHRISTOPHER R., *Energy-Efficient Querying of Wireless Sensor Networks*. AFIT/DS/ENG/07-19. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/IFSC.

NGUYEN, THAO Q., *Efficient GPS Position Determination Algorithms*. AFIT/DS/ENG/07-09. Faculty Advisor: Dr. Meir Pachter. Sponsor: N/A.

OCHOA, EDWARD M., *Hybrid Micro-Electro-Mechanical Tunable Filter*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SNDP.

SALLBERG, SCOTT A., *Sampled-Data Kalman Filtering and Multiple Model Adaptive Estimation for Infinite-Dimensional Continuous-Time Systems*. AFIT/DS/ENG/07-08. Faculty Advisor: Dr. Peter S. Maybeck. Sponsor: AFRL/ISN.

SISKANINETZ, WILLIAM J., *Bipolar Cascade Vertical-Cavity Surface-Emitting Lasers for RF Photonic Link Applications*. AFIT/DS/ENG/07-22. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/SNDP.

STRONG, DAVID M., *Polarimeter Blind Deconvolution Using Image Diversity*. AFIT/DS/ENG/07-23. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/DESA.

## 5.2.2. MASTER'S THESES

### 5.2.2.1. AERONAUTICAL ENGINEERING (GAE)

BARBA-SORRA, VICTOR M., *Controller Design for Accurate Antenna Pointing Onboard a Spacecraft*. AFIT/GAE/ENG/07-03. Faculty Advisor: Dr. Meir Pachter. Sponsor: SAF.

JAMES, STEVEN A., *A Small Scale Imaging Platform for Algorithm Performance Evaluation*. AFIT/GAE/ENG/07-01. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

ROSARIO, ROLAND A., *Optimal Sensor Threshold Control and the Weapon Operating Characteristic for Autonomous Search and Attack Munitions*. AFIT/GAE/ENG/07-02. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/VA.

### 5.2.2.2. APPLIED PHYSICS (GAP)

ROCHE, JAMES F., *Performance of Airborne Tactical High Energy Laser Arrays With Non-Redundant Autocorrelations Through Turbulence*. AFIT/GAP/ENG/07-01. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.

### 5.2.2.3. COMPUTER ENGINEERING (GCE)

BIRRER, BOBBY D., *Metamorphic Program Fragmentation as a Software Protection*. AFIT/GCE/ENG/07-01. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SNT.

BRAKUS, BRIAN M., *A Modular Mixed-Signal VLSI Design Approach for Digital Radar Applications*. AFIT/GCE/ENG/07-02. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SND.

CORYELL, CHRISTOPHER E., *Using Concept Maps to Efficiently Build Information Models for SAVANT*. AFIT/GCE/ENG/07-03. Faculty Advisor: Lt Col Timothy J. Halloran. Sponsor: NASIC/SC.

HART, SAMUEL A., *APHID: Anomaly Processor in Hardware for Intrusion Detection*. AFIT/GCE/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

HUDSON, SEAN W., *Identifying Bot Infections on Air Force Networks using Advanced Methodologies*. AFIT/GCE/ENG/07-05. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: N/A.

KOPERSKI, CHOYONG G., *Multi-Robot FastSLAM for Large Domains*. AFIT/GCE/ENG/07-06. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

MACDONALD, JASON E., *Use of Tabu Search in a Solver to Map Complex Networks onto Emulab Testbeds*. AFIT/GCE/ENG/07-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFCA/ENAN.

MEDLEY, DOUGLAS P., *Virtualization Technology Applied to Rootkit Defense*. AFIT/GCE/ENG/07-08. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SN.

MONTIMINY, DAVID P., *Using Relocatable Bitstreams for Fault Tolerance*. AFIT/GCE/ENG/07-09. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/VSSE.

NERENBERG, DANIEL D., *A Study of Rootkit Stealth Techniques and Associated Detection Methods*. AFIT/GCE/ENG/07-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.

#### **5.2.2.4. COMPUTER SCIENCE/COMPUTER SYSTEMS (GCS)**

- ABAN, EDMUND D., *Adaptive Gravitational Gossip in Monitoring the Joint Battlespace Infosphere*, AFIT/GCS/ENG/07-01. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.
- DEFREITAS, ADRIAN A., *Developing Parallel Ant Colony Synchronization Strategies*. AFIT/GCS/ENG/07-15. Faculty Advisor: Maj Christopher B. Mayer. Sponsor: AFRL/IFS.
- DRIES, ERIK J., *Scaling Ant Colony Optimization with Hierarchical Reinforcement Learning Partitioning*. AFIT/GCS/ENG/07-16. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A.
- FLETCHER, JORDAN L., *Real-Time GPS-Alternative Navigation Using Commodity Hardware*. AFIT/GCS/ENG/07-02. Faculty Advisor: Maj Michael J. Veth. Sponsor: AFRL/MN.
- GARNER, ROGER L., *Heuristically Driven Search Methods for Topology Control in Directional Wireless Hybrid Networks*. AFIT/GCS/ENG/07-03. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.
- GORSUCH, ROGER L., *Analysis of Routing Worm Propagation on an IPv4 Network*. AFIT/GCS/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.
- GRAHAM, DANIEL F., *On-Demand Key Distribution for Mobile Ad-Hoc Networks*. AFIT/GCS/ENG/07-12. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.
- HAAG, CHARLES R., *An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm With Application to the Detection of Distributed Computer Network Intrusions*. AFIT/GCS/ENG/07-05. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: NSA/NCSC.
- HAYDEN, WALTER J., *Locating Encrypted Data Hidden Among Non-Encrypted Data Using Statistical Tools*. AFIT/GCS/ENG/07-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.
- HYLAND, MATTHEW T., *Performance Evaluation of Ad-Hoc Routing Protocols in a Swarm of Autonomous Unmanned Aerial Vehicles*. AFIT/GCS/ENG/07-07. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.
- PARK, HEUNG SOON, *Effective Mobile Routing Through Dynamic Addressing*. AFIT/GCS/ENG/07-09. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.
- PATTERSON, CHRISTOPHER A., *Multi-Objective Optimization for Speed and Stability of a Sony AIBO Gait*. AFIT/GCS/ENG/07-17. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.
- SEYBA, JASON R., *Voice and Video Capacity of a Secure Wireless System*. AFIT/GCS/ENG/07-14. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/HE.
- SHAW, ALFRED K., *A Model for Performing Mission Impact Analysis of Network Outages*. AFIT/GCS/ENG/07-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 8<sup>th</sup> AF/AFNOC.
- WOOLLEY, BRIAN G., *Unified Behavior Framework for Reactive Control in Real-Time Systems*. AFIT/GCS/ENG/07-11. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/SNRN.

#### **5.2.2.5. ELECTRICAL ENGINEERING (GE)**

- ALBAIRAT, OUAIL, *Multi-Dimensional Classification Algorithm for Automatic Modulation Recognition*. AFIT/GE/ENG/07-01. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNR.

BARTON, RICHARD J., *Design and Analysis of a Compact Passive Ultra-Wideband Hexagonal Spiral Array Antenna*. AFIT/GE/ENG/07-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFRL/SNR.

BELLOTT, MARK M., *Microelectro-Mechanical (MEMS) Safe and Arm Device*. AFIT/GE/ENG/07-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.

BRAULT, GREGORY J., *Multi-Dimensional Range Querying Using a Modification of the Skip Graph*. AFIT/GE/ENG/07-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/ENAN.

BUSCHELMAN, ERIC A., *Material Characterization Improvement in High Temperature Rectangular Waveguide Measurements*. AFIT/GE/ENG/07-05. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/SNS.

CHAPLA, ERIK A., *Statistical Machine Translation of Japanese*. AFIT/GE/ENG/07-06. Faculty Advisor: Dr. Steven C. Gustafson. Sponsor: NSA.

FOWLER, JOSHUA D., *Impact of Window Selection on Zero-Doppler Clutter Estimation and Subtraction for ISAR Applications*. AFIT/GE/ENG/07-07. Faculty Advisor: Dr. Michael A. Temple. Sponsor: 46 TS/OGEE.

GIMELSHTeyN, MAXIM., *Classifying Commercial Receiver Emissions Using Fisher Discriminant Analysis*. AFIT/GE/ENG/07-08. Faculty Advisor: Dr. Michael A. Temple. Sponsor: N/A.

GLAUVITZ, NATHAN E., *Toward a Flying MEMS Robot*. AFIT/GE/ENG/07-09. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNAV.

HAKER, MARSHALL E., *Hardware Realization of a Transform Domain Communications System*. AFIT/GE/ENG/07-10. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRW.

HARMON, DUANE F., *Overcoming TCP Degradation in the Presence of Multiple Intermittent Link Failures Utilizing Intermediate Buffering*. AFIT/GE/ENG/07-11. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

HARNER, ALAN L., *Sub-Surface Navigation Using Very-Low Frequency Electromagnetic Waves*. AFIT/GE/ENG/07-12. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/SNRP.

HOLSTON, MATTHEW E., *Moving Target Focusing, Geolocation, and Ambiguity Resolution Using Single-Channel Synthetic Aperture Radar*. AFIT/GE/ENG/07-13. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

LEAVER, MICHAEL D., *Signal Coexistence Study on the GPS L2 Civil Signal Broadcast From the Block IIR-M Class Satellites*. AFIT/GE/ENG/07-14. Faculty Advisor: Dr. Stewart L. DeVilbiss. Sponsor: AFRL/SNZW.

LLEWELLYN, LARRY C., II, *Distributed Fault-Tolerant Quality of Service Routing in Hybrid Directional Wireless Networks*. AFIT/GE/ENG/07-15. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR and AFRL.

MAJUMDER, UTTAM K., *Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular Synthetic Aperture Radar*. AFIT/GE/ENG/07-26. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/SNAS.

MAYHEW, OSCAR C., *RADAR System Characterization Extended to Hardware-in-the-Loop Simulation for the Lab-Volt System*. AFIT/GE/ENG/07-29. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/SN.

- MILLER, VIRGINIA, *Conceptual MEMS Devices for a Redeployable Antenna*. AFIT/GE/ENG/07-30. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/MNMF.
- MONTIMINY, MYRNA B., *Passive Geolocation of Low-Power Emitters in Urban Environments Using TDOA*. AFIT/GE/ENG/07-16. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/SNRW.
- MOTT, STEPHEN D., *Hardware-Based Primitives to Enhance Parallel Security Monitoring in a Novel Computing Architecture*. AFIT/GE/ENG/07-17. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/SNTA.
- PAUL, JASON V., *Anti-Tamper Method for Field Programmable Gate Arrays Through Temporal Decoy Circuits*. AFIT/GE/ENG/07-18. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/SNTA.
- PEREZ, SERGIO P., *Amplitude Comparison Method to Determine Direction of Arrival for RF Communication*. AFIT/GE/ENG/07-27. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/SNAT.
- POMAGER, JOSEPH C., *Parametric Reliability of Space-Based Field Programmable Gate Arrays*. AFIT/GE/ENG/07-19. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/VSEE.
- ROBERTS, DANIEL K., *Performance Analysis and Comparison of Multiple Routing Protocols in a Large-Area High-Speed Mobile Node Ad Hoc Network*. AFIT/GE/ENG/07-28. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA/EN.
- SCHWENN, KARL R., *Biological Cell Identification by Integrating Micro-Fluids, Electrical Impedance Spectroscopy and Stochastic Estimation*. AFIT/GE/ENG/07-20. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/HEPB.
- SILVA, RYAN J., *Implementation and Optimization of the Advanced Encryption Standard Algorithm on an 8-Bit Field Programmable Gate Array Hardware Platform*. AFIT/GE/ENG/07-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.
- SPENCER, JAMES H., *Optical Tracking for Relative Positioning in Automated Aerial Refueling*. AFIT/GE/ENG/07-22. Faculty Advisor: Lt Col Matthew Goda. Sponsor: AFRL/VACC.
- STUCKEY, NATHAN C., *Stochastic Estimation and Control of Queues Within a Computer Network*. AFIT/GE/ENG/07-24. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFOSR.
- VELOTTA, JAMIE S., *Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/07-31. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/SNRN.
- WINNINGHAM, BRYAN W., *Characterization of Intercalated Graphite Fibers for Microelectromechanical Systems (MEMS) Applications*. AFIT/GE/ENG/07-25. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/IFTA.

#### **5.2.2.6. ELECTRO OPTICS (GEO)**

- ALLARD, MARK E., *Characterization of a Polymer-Based MEMS Pyroelectric Infrared Detector*. AFIT/GEO/ENG/07-01. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/MLPJF.
- ELLIS, TROY R., *Airborne Laser Tracking Signal Degradation From Wave Optics Simulation of Propagation Through Computational Fluid Dynamics Models of Aero-Optics*. AFIT/GEO/ENG/07-02. Faculty Advisor: Capt Jason D. Schmidt. Sponsor: N/A.
- JOHNSON, MATTHEW T., *Thermally Activated, Variable Blazed Grating for Coherent Beam Steering*. AFIT/GEO/ENG/07-04. Faculty Advisor: Dr. Guna S. Seetharaman. Sponsor: N/A.

SEAL, MICHAEL D., *Nonlinear Time-Variant Response in an Avalanche Photodiode Array Based Laser Detection and Ranging System*. AFIT/GEO/ENG/07-03. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/SNJM.

#### **5.2.2.7. INFORMATION ASSURANCE (GIA)**

BENSON, JOSHUA A., *Software Protection Against Reverse Engineering Tools*. AFIT/GIA/ENG/07-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/SNTA.

COATES, GREGORY M., *Collaborative, Trust-Based Security Mechanisms for a National Utility Intranet*. AFIT/GIA/ENG/07-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: N/A

FRANZ, TIMOTHY P., *IO Foundations to Cyberspace Operations*. AFIT/GIA/ENG/07-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

STEVENS, MICHAEL R., *Use of Trust Vectors in Support of the CyberCraft Initiative*. AFIT/GIA/ENG/07-03. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/IFGB.

TODD, ADAM D., *Network Intrusion Detection System Evasion*. AFIT/GIA/ENG/07-04. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/SN.

#### **5.2.2.8. INFORMATION RESOURCE MANAGEMENT (GIR)**

SMITH, TIFFINYS., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*. AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS/CC.

#### **5.2.2.9. SPACE SYSTEMS (GSS)**

DAINTY, BENJAMIN G., *Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation*. AFIT/GSS/ENG/07-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: SAF.

### **5.2.3. GRADUATE RESEARCH PAPERS**

#### **5.2.3.1. COMMAND, CONTROL, COMMUNICATIONS, COMPUTER, AND INTELLIGENCE SYSTEMS (IC4)**

ARWOOD, SAM., *Cyberspace as a Theater of Conflict: Federal law, National Strategy, and the Departments of Defense and Homeland Security*. AFIT/IC4/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: Joint Staff/J6.

BARNHART, BRADLEY W., *The Current State of Biometrics to Enhance Network Information Assurance for Air Force Networks*. AFIT/IC4/ENG/07-02. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XC.

DOWNS, ROBERT O., *Mitigation of Residual Bias in the Missile Defense Agency Tracking System*. AFIT/IC4/ENG/07-06. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

DUNKLEE, DAVID R., *Improving Air Force Active Network Defense Systems Through an Analysis of Intrusion Detection Techniques*. AFIT/IC4/ENG/07-05. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

HANNAH, JON T. See DOWNS, ROBERT O.

KARDOES, MICHAEL J. See DOWNS, ROBERT O.

TREAT, TIMOTHY J., *The Way Ahead for Cyberspace Operations: A JCIDS Analysis*. AFIT/IC4/ENG/07-08. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

WAINWRIGHT, FREDRICK W. See BARNHART, BRADLEY W.

#### **5.2.3.2. ELECTRICAL SCIENCE (IES)**

BIERYLA, JAMES J., *Processor Requirements for a Reconfigurable Airborne Sensor Pod*. AFIT/IES/ENG/07-01. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: USAF/TPS.

#### **5.2.4. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

##### **CAIN, STEPHEN C.,**

“3-D LADAR Resolution Enhancement.” Sponsor: AFRL/SN. Funding: \$6,000.

“Detection of Obscured Targets Using a FLASH LADAR System.” Sponsor: AFOSR. Funding: \$27,391.

“Synthetic Aperture Image Reconstruction for Next Generation Laser Imaging and Ranging Systems: Building True Synthetic Apertures.” Sponsor: SAF. Funding: \$34,684.

##### **COLLINS, PETER J.,**

“Technical Support: RCS Methodology.” Sponsor: 746 TSS/XP. Funding: \$25,000.

##### **HAVRILLA, MICHAEL J.,**

“Electromagnetic Analysis and Design of Non-Destructive Evaluation Systems.” Sponsor: AFRL/ML. Funding: \$140,000.

“Electromagnetic Analysis and Design of the Thiele Half-Width Leaky Wave Antenna.” Sponsor: AFRL/SN. Funding: \$20,000.

##### **HOPKINSON, KENNETH M.,**

“An Investigation into the Required Middleware Interface Between Net-Centric Infrastructure and its Operators.” Sponsor: AFRL/IF. Funding: \$50,000.

“Effective Utilization of a Hybrid Communication Network.” Sponsor: SAF. Funding: \$46,595.

“HPCMP Summer Intern Support.” Sponsor: AFOSR. Funding: \$51,020.

##### **KURKOWSKI, STUART H., Maj,**

“An Interactive Visualization Approach to Interface Network Centric Operators with Dynamic Network Infrastructure.” Sponsor: AFOSR. Funding: \$27,906.

“Toolkit for Visualizing Situation Scope.” Sponsor: AFRL/IF. Funding: \$54,810.

##### **LAMONT, GARY B.,**

“Optimal Wavelet Coefficient Determination with Genetic Algorithms.” Sponsor: AFRL/IF. Funding: \$25,000.

##### **MARTIN, RICHARD K.,**

“Infrastructure Cost for ANT Center: Navigation using Multicarrier Signals of Opportunity.” Sponsor: AFRL/SN. Funding: \$24,250. [ANT]

“Technical Support: Cognitive Radio Research.” Sponsor: AFRL/SN. Funding: \$10,000.

**MILLS, ROBERT F.,**

“Insider Threat Research Laboratory and Ongoing Research of Investigating Methods, Algorithms and Approaches to Reduce the Risk of the Insider Threat Problem.” Sponsor: NSA. Funding: \$10,000. [CCR]

“Technical Support, Information/Cyber Operations: Sensing Applications.” Sponsor: AFIOC/IO. Funding: \$15,000. [CCR]

**MULLINS, BARRY E.,**

“Air Force Communications Systems Modeling.” Sponsor: AFCA. Funding: \$64,000. [CCR]

**PACHTER, MEIR,**

“Cooperative Control and Estimation.” Sponsor: AFOSR. Funding: \$43,282.

“Feasibility Study of In-Situ Plant Dynamics Identification for a Satellite Payload System.” Sponsor: SAF. Funding: \$40,000.

“Planning, Guidance, and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/VA. Funding: \$10,000.

**PETERSON, GILBERT L.,**

“Biologically Motivated Autonomous Navigation and Cooperative Control.” Sponsor: DAGSI. Funding: \$20,160. [ANT]

“CANIS-Related Navigation Research Projects for the ANT-Laboratory.” Sponsor: AFRL/SN. Funding: \$50,000. [ANT]

**RAINES, RICHARD A.,**

“AFIT Transformation Chair.” Sponsor: SECDEF. Funding: \$166,700. [CCR]

“Target Discovery, Sensor Fusion, and Mitigation Analysis.” Sponsor: AFRL/SN. Funding: \$225,000. [CCR/COA]

**RAQUET, JOHN F.,**

“ANT Center and Laboratory Support.” Sponsor: AFRL/SN. Funding: \$242,000. [ANT]

“Development of High Accuracy TSPI Systems.” Sponsor: 746<sup>th</sup> Test Squadron. Funding: \$45,900. [ANT]

“Indoor Navigation Using Signals of Opportunity Integrated with Other Sensors.” Sponsor: DARPA. Funding: \$68,750. [ANT]

“Overcoming Geometric Deficiencies in Pseudolite Navigation.” Sponsor: AFOSR. Funding: \$99,855. [ANT]

“Sub-Surface Navigation.” Sponsor: AFRL/SN. Funding: \$31,250. [ANT]

“Transition to Laboratory Testing of Two-Way Time Transfer Measurements for Navigation.” Sponsor: SAF. Funding: \$16,061. [ANT]

**SAVILLE, MICHAEL, A., Capt,**

“In-house Support for Program ECM Technique Generator.” Sponsor: AFRL/IF. Funding: \$10,000.

**SCHMIDT, JASON D., Capt,**

“Atmospheric Propagation of High Energy Lasers: Modeling, Simulation, Tracking, and Control.” Sponsor: AFRL/DE. Funding: \$19,111.

“Mitigating Atmospheric Turbulence through Robust Laser Beam Tilt Control.” Sponsor: AFRL/DE. Funding: \$25,000. [CDE]

**SEETHARAMAN, GUNA S.,**

“Image Registration and Spatio-Temporal Assimilation for Persistent Surveillance.” Sponsor: AFRL/SN. Funding: \$50,000.

**TEMPLE, MICHAEL A.,**

“Continuation Project: Detection, Characterization, Location of Spurious Receiver Emissions.” Sponsor: SAF. Funding: \$44,361.

“Phase II Technical Support for RF Sensor Technology.” Sponsor: AFRL/SN. Funding: \$15,000.

“Technical Support: RF-EW Systems.” Sponsor: AFRL/SN. Funding: \$100,000.

“Technical Support: RF Geolocation Systems.” Sponsor: AFRL/SN. Funding: \$50,000.

**TERZUOLI, ANDREW J. JR.,**

“ECM Against Passive Radar.” Sponsor: AFRL/SN. Funding: \$20,000.

“Remote Sensing and Communications for MASINT.” Sponsor: NASIC. Funding: \$150,000.

**VASQUEZ, JUAN R., Lt Col,**

“Target Tracking and Data Communication for Angel Fire.” Sponsor: AFRL/SN. Funding: \$89,042. [ANT]

“Target Tracking for the Missile Defense Agency.” Sponsor: MDA. Funding: \$50,000.

**VETH, MICHAEL J., Maj,**

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: \$50,000. [ANT]

**WILLIAMS, PAUL D., Maj,**

“AFIT Support for AFRL Cybercraft Project.” Sponsor: AFOSR. Funding: \$40,000.” [CCR]

“Development of an Air Force Cyber Warfare Realistic Training Model.” Sponsor: AFRL/HE. Funding: \$25,000. [CCR]

### 5.2.5. FUNDED EDUCATIONAL PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

#### **RAINES, RICHARD A.,**

“Anti-Tamper Software Protection Initiative Education, Outreach, and Research.” Sponsor: AFRL/SN.  
Funding: \$75,000. [CCR]

“Development of a Federal Cyber Force at the Air Force Institute of Technology.” Sponsor: NSF. Funding: \$510,710. [CCR]

“Tuition and Resource Support for AFIT Center for Information Security Education and Research.” Sponsor: NSA. Funding: \$317,448. [CCR]

### 5.2.6. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BALDWIN, RUSTY O.,**

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, “Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees,” *Journal of Information Warfare*, August 2007, Vol. 6, No. 2, pp. 25-38. [CCR]

V. P. Hubenko, Jr., R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins and M. R. Grimaila, “Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements,” *IEEE Network Special Issue on Advances in Network Systems Architecture*, July/August 2007, pp. 51-56. [CCR]

G. R. Roelke, R. O. Baldwin, B. E. Mullins and Y. C. Kim, “A Cache Architecture for Extremely Unreliable Nanotechnologies,” *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]

S. D. Bass and R. O. Baldwin, “A Model for Managing Decision-Making Information in the GIG-Enabled Battlespace,” *Air & Space Power Journal (ASPJ)*, Summer 2007, Vol. 21, No. 2, pp. 100-108. [CCR]

G. R. Roelke, R. O. Baldwin, and D. Bulutoglu, “Analytical Models for the Performance of von Neumann Multiplexing,” *IEEE Transactions on Nanotechnology*, January 2007, Vol. 6, No. 1, pp. 75-89. [CCR]

R. O. Baldwin, B. S. Peterson, and R. F. Mills, “Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks,” *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]

D. J. Chaboya, R. A. Raines, R. O. Baldwin, and B. E. Mullins, “Network Intrusion Detection: Automated and Manual Methods Prone to Attack and Evasion,” *IEEE Security and Privacy*, November/December 2006, Vol. 4, No. 6, pp. 36-43. [CCR]

V. P. Hubenko, R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins, and M. R. Grimaila, “Improving the Global Information Grid’s Performance Through Satellite Communications Layer Enhancements,” *IEEE Communications Magazine*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

#### **CAIN, STEPHEN C.,**

A. Macdonald and S. Cain, “Parameterized Blind Deconvolution of Laser Radar Imagery using an Anisoplanatic OTF,” *Optical Engineering*, vol. 45, no. 11, 116001, November 2006.

A. Macdonald, S. Cain and M. Oxley, “Binary Weighted Averaging of an Ensemble of Coherently Collected Image Frames,” *IEEE Transactions on Image Processing*, pp. 1085-1100, April 2007.

**DAVIS, NATHANIEL J. IV.,**

“Mobile Host-Based Intrusion Detection and Attack Identification,” Grant A. Jacoby and Nathaniel J. Davis IV, *IEEE Wireless Communications Magazine*, Volume 14, Number 4, August 2007, pp. 53-60.

**GUSTAFSON, STEVEN C.,**

Gustafson, S.C., Parker, D.R., and Martin, R.K., "Cardinal Interpolation," *IEEE Trans. Pattern Analysis Machine Intelligence*, Vol. 29, No. 9, pp. 1538 - 1545, September 2007.

**HAVRILLA, MICHAEL J.,**

G. Zelinski, G. Thiele, M. Hastriter, M. Havrilla and A. Terzuoli, “Half-width Leaky Wave Antennas,” *IET Proceedings - Microwaves, Antennas and Propagation*, vol. 1, no. 2, pp. 341-348, April 2007.

J. Luminati, T. Hale, M. Temple, M. Havrilla and M. Oxley, “Cross-range Aliasing Reduction in SAR Imagery Using Stepped-frequency Waveforms,” *IEEE Transactions on Aerospace and Electronic Systems*, vol. 43, no. 1, pp. 163-175, January 2007.

J. Stewart and M. Havrilla, “Electromagnetic Characterization of a Magnetic Material Using an Open-ended Waveguide Probe and a Rigorous Full-wave Multimode Model,” *Journal of Electromagnetic Waves and Applications*, vol. 20, no. 14, pp. 2037-2052, December 2006.

**HOPKINSON, KENNETH M.,**

Giovanini, R., Hopkinson, K. M., Coury, D. V. and Thorp, J. S., “A Primary and Backup Cooperative Protection System Based on Wide Area Agents,” *IEEE Transactions on Power Delivery*, 21(3):1222-1230 (2006).

Hopkinson, K., Wang, X., Giovanini, R., Thorp, J., Birman, K. and Coury, D., “EPOCHS: A Platform for Agent-based Electric Power and Communication Simulation Built from Commercial Off-The-Shelf Components,” *IEEE Transactions on Power Systems*, 21(2):548-558 (2006).

**MARTIN, RICHARD K.,**

Martin, R. K. “Joint Blind Adaptive Synchronization and Channel Shortening,” *IEEE Transactions on Signal Processing*, vol. 54, no. 11, November 2006, pp. 4194-4203.

Martin, R. K., “Fast-converging Blind Adaptive Channel Shortening and Frequency-domain Equalization,” *IEEE Transactions on Signal Processing*, vol. 55, no. 1, January 2007, pp. 102-110.

Martin, R. K., Vanbleu, K. and Ysebaert, G., “Bit Error Rate Minimizing Channel Shortening Equalizers for Cyclic Prefixed Systems,” *IEEE Transactions on Signal Processing*, vol. 55, no. 6, June 2007, pp. 2605-2616.

Gustafson, S. C., Parker, D. R., and Martin, R. K., “Cardinal Interpolation,” *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 29, no. 9, September 2007, pp. 1538-1545.

**MAYER, CHRISTOPHER B., Maj,**

Lina Peng, K. Selçuk Candan, Christopher Mayer, Kyung D. Ryu and Karamvir S. Chatha., “Optimization of Media Processing Workflows with Adaptive Operator Behaviors,” *Multimedia Tools and Applications*: 33(3): 245–272, June 2007.

## **MILLS, ROBERT F.,**

Roberts, M.L., Temple, M.A., Raines, R.A., Mills, R.F., and Oxley, M.E., "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp. 203-213. [CCR]

Franz, T.P., Durkin, M., Williams, P.D., Raines, R.A., and Mills, R.F., "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

Hubenko, V.P., Raines, R.A., Mills, R.F., Baldwin, R.O., Mullins, B.E., and Grimaila, M.R., "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, Nov 2006, Vol 44, No 11, pp 66-72. [CCR]

Roberts, M.L., Temple, M.A., Mills, R.F., and Raines, R.A., "Interference Suppression Characterisation for Spectrally Modulated, Spectrally Encoded Signals," *IEE Electronics Letters*, Vol 42, Issue 19, pp 1103-1104, Sept 2006. [CCR]

Baldwin, R.O., Peterson, B.S., and Mills, R.F., "Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]

## **MULLINS, BARRY E.,**

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F. and Grimaila, M. R., "Improving Satellite Multicast Security Scalability by Reducing Rekeying Requirements," *IEEE Network*, July/August 2007, Vol. 21, No. 4, pp. 51-56. [CCR]

Mullins, B. E., Lacey, T. H., Mills, R. F., Trechter, J. M. and Bass, S. D., "How the Cyber Defense Exercise Shaped an Information Assurance Curriculum," *IEEE Security and Privacy*, September/October 2007, Vol. 5, No. 5, pp. 40-49. [CCR]

Roelke, G. R., Baldwin, R. O., Mullins B. E. and Kim, Y. C., "A Cache Architecture for Extremely Unreliable Nanotechnologies," *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]

Finnigin, K. M., Mullins, B. E., Raines, R. A. and Potoczny, H. B., "Cryptanalysis of an Elliptic Curve Cryptosystem for Wireless Sensor Networks," *International Journal of Security and Networks (IJSN), Special Issue on Cryptography in Networks*, 2007, Vol. 2, No. 3/4, pp. 260-271. [CCR]

Hubenko, V. P. Raines, R. A., Mills, R. F., Baldwin, R. O., Mullins, B. E. and Grimaila, M. R., "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

## **PACHTER, MEIR**

G. Gu, P. Chandler, C. Shumacher, A. Sparks and M. Pachter: "Optimal Cooperative Sensing Using a Team of UAVs," *IEEE Trans. on Aerospace and Electronic Systems*, Vol. 42, No 4, October 2006, pp. 1446-1458.

C. Schumacher, P. Chandler, M. Pachter and L. S. Pachter: "Optimization of Air Vehicles Operations," *Journal of the Operations Research Society*, Vol. 58, April 2007, pp. 516-527.

B. Kish, D. Jacques and M. Pachter: "Optimal Control of Sensor Threshold for Autonomous wide Area Search Munitions," *AIAA Journal of Guidance, Control and Dynamics*, Vol. 30, No 5, Sep-Oct 2007, pp. 1239-1248.

**PETERSON, GILBERT L.,**

Peterson, G.L., and McBride, B.T., "Importance of Generalizability to Anomaly Detection," *Knowledge and Information Systems*. (electronic publication 24 March 2007, paper in press). [CCR]

Wardell, D.C., and Peterson, G.L., 2007, "Fuzzy State Aggregation and Policy Hill Climbing for Stochastic Environments," *International Journal of Computational Intelligence and Applications*, vol. 6:3, pp. 413-428. [ANT]

Todd, A.D., Benson, J. A., Peterson, G.L., Franz, T. P., Stevens, M. R., and Raines, R.A., 2007, "An Analysis of Forensic Tools in Detecting Rootkits and Hidden Processes." *Advances in Digital Forensics III*, S. Shenoi, and P. Craiger, eds., Springer Science+Business Media, New York, NY, pp. 89-106. [CCR]

Rodriguez, B.M., and Peterson, G.L., 2007, "Steganography Detection Using Mutli-Class Classification," *Advances in Digital Forensics III*, eds. Craiger, P., and Shenoi, S., Springer Science+Business Media, New York, NY, pp. 193-204. [CCR]

**RAINES, RICHARD A.,**

V. P. Hubenko, Jr., R. A. Raines, R. O. Baldwin, B. E. Mullins, R. F. Mills, and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements," *IEEE Network, Special Issue on Advances in Network Systems Architecture*, July/August 2007, Vol. 21, No. 4, pp. 51-56. [CCR]

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, C. Reuter, R. W. Bennington, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *International Journal of Information Warfare*, (2007) Vol. 6., No. 2, pp. 25-38. [CCR]

T. P. Franz, M. Durkin, P. D. Williams, R. A. Raines, and R. F. Mills, "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

M.L. Roberts, M.A. Temple, R.A. Raines, R.F. Mills and M.E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp 203-213. [CCR]

K. M. Finnigin, B. E. Mullins, R. A. Raines, and H. B. Potoczny, "Cryptanalysis of an Elliptic Curve Cryptosystem for Wireless Sensor Networks," *International Journal of Security and Networks (IJSN), Special Issue on Cryptography in Networks*, 2007, Vol. 2, No. 3/4, pp. 260-271. [CCR]

J. Lopez, R. A. Raines, M. A. Temple, and R. O. Baldwin, "An Investigation On The Effects Of Emerging 4G Transmissions On 3G Networks," *OMEGA: Special Issue on Telecommunications*, Available online: September 2006, Omega 35 (2007), Vol. 35, pp.706-714. [CCR]

D. J. Chaboya, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Network Intrusion Detection Systems Evasion Techniques and Solutions," *IEEE Security and Privacy* November/December 2006, Vol. 4, No. 6, pp. 36-43. [CCR]

V. P. Hubenko, R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins, and M. R. Grimaila, "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

**RAQUET, JOHN F.,**

Veth, M. and J. Raquet, "Fusing Low-Cost Image and Inertial Sensors for Passive Navigation," *NAVIGATION: Journal of the Institute of Navigation*, Vol. 54, No. 1 (2007). [ANT]

**SAVILLE, MICHAEL A., Maj,**

Saville, M. A. and Chew, W. C., "Multipole free fast inhomogeneous plane wave algorithm," *Radio Science*, 42, RS5002, doi:10.1029/2007RS003664, 2007.

**SCHMIDT, JASON D., Capt,**

Schmidt, J.D., Goda, M.E., and Duncan, B.D., "Aberration Production Using a High-Resolution Liquid-Crystal Spatial Light Modulator," *Applied Optics*, Vol 46, p. 2423. May 2007.

**SEETHARAMAN, GUNA S.,**

IEEE Computer, a Special Issue on DARPA Grand Challenge and Next Generation of Autonomous Vehicles. Guest Editors: Guna Seetharaman, Arun Lakhotia, and Erik Blasch. Dec 2006.

EURASIP Journal of Embedded Systems, a Special Issue on Intelligent Autonomous Vehicles. Guest Editors: Paolo Lambardi, (European Commission Joint Research Center, Italy), Samir Bouaziz, (Univ. Paris XI France), Roger Reynaud (Univ. Paris XI, France), and Guna Seetharaman. Publication date: Jun 2007.

F. Bunyak, K. Palaniappan, S. Nath and G. Seetharaman, "Flux Tensor Constrained Geodesic Active Contours with Sensor Fusion for Persistent Object Tracking," *Journal of Multimedia*, Vol. 2, No. 4, August 2007.

B. Zavidovique and G. Seetharaman. "Z-Trees and Peano Rasters for Scan Adaptive Image Processing," *International Journal of Pure and Applied Mathematics*, Volume IJPAM-38, No. 1, pp. 123-151, August 2007.

**STARMAN, LAVERN A., Maj**

Ochoa, E., Starman, L., Bedford, R., Nelson, T., Ehret, J., Harvey, M., Anderson, T., & Ren, F., "Flip bonding with SU-8 for hybrid AlxGa1-xAs-polysilicon MEMS-tunable filter," *Journal of Micro/Nanolithography, MEMS and MOEMS*, Volume 6, Issue 3, July-September 2007.

Edward Ochoa, Thomas Nelson, Robert Bedford, James Ehret, LaVern Starman, Michael Harvey, Travis Anderson, Fan Ren, "Demonstration of Hybrid AlxGa1-xAs-Polysilicon Microelectromechanical Tuneable Filter," *IEEE Photonics Technology Letters*, Vol. 19, No. 6, March 15, 2007

**TEMPLE, MICHAEL A.,**

M.L. Roberts, M.A. Temple, R.A. Raines, R.F. Mills and M.E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, Jun 2007, pp. 203-213. [CCR]

J.E. Luminati, T.B. Hale, M.A. Temple, M.J. Havrilla, and M.E. Oxley. "Doppler Aliasing Reduction in SAR Imagery Using Stepped-Frequency Waveforms," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 43, No. 1, Jan 2007, pp. 163-175.

J. Lopez, Jr., R.A. Raines, M.A. Temple, R.O. Baldwin, and J.P. Stephens, "An Investigation on the Effects of Emerging 4G Transmissions on 3G Networks," *Omega, The International Journal of Management*, Vol. 35, No. 6, Dec 2006, pp. 706-714. [CCR]

P. Baizert, T.B. Hale, M.A. Temple, and M.C. Wicks, "Forward-Looking Radar GMTI Benefits Using a Linear Frequency Diverse Array," *IEEE Electronics Letters*, Vol. 42, No. 22, Oct 2006, pp. 1311-1312.

**TERZUOLI, ANDREW J., JR.,**

G. M. Zelinski, G. A. Thiele, M. L. Hastriter, M. J. Havrilla, A. J. Terzuoli, "Half Width Leaky Wave Antennas," *IET Microwaves, Antennas, and Propagation (IEE Proc. Microwaves, Antennas, and Propagation)*, vol, 1, no. 2, April 2007, pp. 341-348.

**VETH, MICHAEL J., Maj,**

"Fusion of Low-Cost Inertial Systems for Precision Navigation," Veth, M.J., Raquet, J.R., *Journal of the Institute of Navigation*, Vol. 54, No. 1, pp. 11-20.

**WILLIAMS, PAUL D., Maj,**

Paul D. Williams and Eugene H. Spafford; "CuPIDS: An Exploration of Highly Focused, Coprocessor-based Information System Protection," *Computer Networks*; Elsevier; v 51(5); pp. 1284-1298; April 2007. [CCR]

T. P. Franz, M. Durkin, P. D. Williams, R. A. Raines, and R. F. Mills, "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

### 5.2.7. REFEREED CONFERENCES

Note: Research Center affiliations are listed in [ ] if applicable.

#### REFEREED CONFERENCE PUBLICATIONS BASED ON FULL PAPER REVIEW

##### **BALDWIN, RUSTY O.,**

- B. D. Birrer, R. A. Raines, R. O. Baldwin, B. E. Mullins, and R. F. Bennington, "Program Fragmentation as a Metamorphic Software Protection," accepted for publication at *The Third International Symposium on Information Assurance and Security*, Manchester, England. [CCR]
- A. D. Todd, R. A. Raines, R. O. Baldwin, B. E. Mullins, and S. K. Rogers, "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007, 10<sup>th</sup> International Symposium*, Queensland Australia. [CCR]
- G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "An Analysis of Mobility Performance Using Inverted Skip Graphs," accepted for publication at the *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, Philadelphia, PA, August 2007. [CCR]
- G. J. Brault, C. J. Augeri, B. E. Mullins, C. B. Mayer, and R. O. Baldwin, "Assessing Standard and Inverted Skip Graphs Using Multi-Dimensional Range Queries and Mobile Nodes," accepted for publication at the *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, Philadelphia, PA, August 2007. [CCR]
- D. P. Montminy, R. O. Baldwin, P. D. Williams, and B. E. Mullins, "Using Relocatable Bitstreams for Fault Tolerance," accepted for publication at the *2nd NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007. [CCR]
- G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "Enabling Skip Graphs to Process  $k$ -Dimensional Range Queries In A Mobile Sensor Network," accepted for publication at the *6th IEEE International Symposium on Network Computing and Applications (IEEE NCA07)*, Cambridge MA, July 2007. [CCR]
- C. J. Augeri, B. E. Mullins, D. A. Bulutoglu, R. O. Baldwin, and L. C. Baird III, "An Analysis of XML Compression and Binary Formats," *1st Workshop on Experimental Computer Science (ExpCS)*, San Diego, California, June 2007, pp. 150.1-150.12. [CCR]
- N. A. Fraser, D. J. Kelly, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," accepted for publication in *IEEE International Conference on Communications (ICC 2007)*, Glasgow, Scotland, 24-28 June 2007, 6 pages (CD). [CCR]
- M. T. Hyland, B. E. Mullins, R. O. Baldwin, and M. A. Temple, "Modeling Geographic Routing Protocols in a Swarm of Unmanned Aerial Vehicles," *IEEE International Symposium on Pervasive Computing and Ad Hoc Communications (PCAC-07)*, Niagara Falls, Canada, May 2007, pp. PCAC-113.1-PCAC-113. [CCR]
- C. J. Augeri, B. E. Mullins, L. C. Baird III, D. A. Bulutoglu, and R. O. Baldwin, "Logarithmic Coloring: How Hard is it to Determine Isomorphism?," accepted to the *44th Midwestern Graph Theory Conference (MIGHTY)*, Wright State University, Dayton, OH, 11-12 May 2007. [CCR]
- S. D. Mott, S. A. Hart, D. P. Montminy, P. D. Williams, and R. O. Baldwin, "A Hardware-based Architecture to Support Flexible Real-Time Parallel Intrusion Detection," *2007 IEEE International Conference on System of Systems Engineering (SoSE) San Antonio, Texas*, April 2007, pp. TBD. [CCR]

- C. R. Mann, R. O. Baldwin, and B. E. Mullins, "Wireless Sensor Networks: Guidelines for Development and a Survey of Current Research," *Proceedings of the 10th Communication and Networking Simulation Symposium* (CNS '07), Norfolk, VA, March 2007, pp. 41-50. [CCR]
- C. J. Augeri, B. E. Mullins, L. C. Baird, D. A. Bulutoglu, and R. O. Baldwin, "IsoCanon: An Algorithm for Determining Isomorphism," *38th Southeastern International Conference on Combinatorics, Graph Theory, and Computing* (SEICCGTC), Boca Raton, FL, March 2007, pp. TBD. [CCR]
- K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *Proceedings of the International Conference on Information Warfare and Security* (ICIW 2007), Monterey, CA, March 2007, pp. 47-56. [CCR]
- K. S. Edge, R. A. Raines, M. R. Grimaila, R. O. Baldwin, R. W. Bennington, and C. E. Reuter, "The Use of Attack and Protection Trees to Analyze Security for an Online Banking System," *The Proceedings of the 40<sup>th</sup> Hawaii International Conference on System Sciences (HICSS-40)* (CDROM), Waikoloa HI, January 2007, 8 pages. [CCR]
- G. L. Peterson, R. A. Raines, and R. O. Baldwin, "Graduate Digital Forensics Education at the Air Force Institute of Technology," *The Proceedings of the 40<sup>th</sup> Hawaii International Conference on System Sciences (HICSS-40)* (CDROM), Waikoloa HI, January 2007, 8 pages. [CCR]
- J. T. Kautz, B. E. Mullins, R. O. Baldwin, and S. R. Graham, "An Adaptable Energy-Efficient Medium Access Control Protocol for Wireless Sensor Networks," *The Proceedings of Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-6. [CCR]
- D. D. Hodson, R. O. Baldwin, and J. G. Weber, "Hardware-Assisted Real-time Simulation," *Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL, December 2006, pp. 2624.1-2624.8. [CCR]
- D. D. Hodson, D. P. Gehl, and R. O. Baldwin, "Building Distributed Simulations Utilizing the EAAGLES Framework," *Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL, December 2006, pp. 2628.1-2628.10. [CCR]

#### **CAIN, STEPHEN C.,**

Stephen C. Cain, "Improved Near Earth Orbiting Asteroid Detection via Statistical Image Fusion," *IEEE Aerospace Conference*, Big Sky Montana, March 2007.

#### **COLLINS, PETER J.,**

- R. J. Barton, P. J. Collins, P. E. Crittendon, M. J. Havrilla, A. J. Terzuoli, Jr., "A Compact Passive Broadband Hexagonal Spiral Antenna Array," *Proceedings of the 2007 IEEE AP-S International Symposium*, Honolulu, HI, 10-15 June 2007, pp. 4401-4404.
- J. A. Girard, M. J. Havrilla, P. J. Collins, "Derivation of the Green's Function for a Microstrip Antenna to Enhance Performance Using Material Perturbations," *Proceedings of the 2007 IEEE AP-S International Symposium*, Honolulu, HI, 10-15 June 2007, pp. 3920-3923.
- R. J. Barton, P. J. Collins, P. E. Crittendon, M. J. Havrilla, A. J. Terzuoli, Jr., "A Compact Passive Ultra-wideband Hexagonal Spiral Array for VHF Remote Sensing Applications," *Proceedings of the 2007 IEEE International Geoscience and Remote Sensing Symposium*, Barcelona, Spain, 23-27 July 2007.

#### **DAVIS, NATHANIEL J., IV**

"Validating a Trust-based Access Control System," Adams, W. and Davis, N.J., IV, *Joint iTrust and PST Conferences on Privacy, Trust Management and Security, International Federation for Information Processing*, Volume 238, Trust Management, eds. Etalle, S., Marsh, S., (Boston: Springer), August 2007, pp.91-106.

#### **HAVRILLA, MICHAEL J.,**

J. Stewart, M. Havrilla, J. Berrie, N. Kornbau, G. Stenholm and A. Albert, "Material Characterization Using a Hand-held Network Analyzer," *International Symposium on Applied Electromagnetics and Mechanics (ISEM)*, pp. TBD, East Lansing, Michigan, September 2007.

M. Havrilla, M. Hyde and J. Stewart, "MFIE Formulation and Uncertainty Analysis of a Dual Rectangular Waveguide Probe Utilized for the EM Characterization of Conductor-backed Lossy Materials," *North American Radio Science Meeting*, Ottawa, Canada, July 2007.

R. Barton, P. Collins, P. Crittenden, M. Havrilla and A. Terzuoli, "A Compact Passive Ultra-Wideband Hexagonal Spiral Antenna Array for VHF Remote Sensing Applications," *International Geoscience and Remote Sensing Symposium*, Barcelona, Spain, July 2007.

J. Girard, M. Havrilla and P. Collins, "Derivation of Green's Function of Microstrip Antenna to Enhance Performance using Material Perturbations," *Antennas and Propagation Conference*, Honolulu, Hawaii, June 2007.

A. Bogle, M. Havrilla and E. Rothwell, "Two-layer Parallel-plate Green's Function Due to a Magnetic Source for Electromagnetic Material Characterization of Conductor Backed Lossy Media," *Antennas and Propagation Conference*, Honolulu, Hawaii, June 2007.

R. Barton, P. Collins, P. Crittenden, M. Havrilla and A. Terzuoli, "A Compact Passive Broadband Hexagonal Spiral Antenna Array," *Antennas and Propagation Conference*, Honolulu, Hawaii, June 2007.

M. Hyde and M. Havrilla, "Measurement of Complex Permittivity and Permeability Using Two Flanged Rectangular Waveguides," *Microwave Theory and Techniques Conference*, Honolulu, Hawaii, June 2007.

J. Fowler, M. Temple, M. Havrilla and J. Akerson, "Characterization of Zero-Doppler Clutter Removal Techniques for ISAR Applications," *IEEE Radar Conference*, Waltham, Massachusetts, pp. 800-804, April 2007.

J. Stewart and M. Havrilla, "A Novel Method for Simultaneously Extracting Electric and Magnetic Properties of Shielding Materials Using Two Coupled Collinear Open-ended Waveguides," *Applied Computational Electromagnetics Conference Proceedings*, pp. 736-742, Verona, Italy, March 2007.

J. Stewart and M. Havrilla, "Simultaneous Extraction of Permittivity and Permeability from a Conductor-backed Lossy Material," *Antenna Measurement Techniques Association (AMTA) Conference Proceedings*, pp. 195-200, Austin, Texas, October 2006.

#### **HOPKINSON, KENNETH M.,**

Shaw, A.K., Mills, R.F., Mullins, B.E., Hopkinson, K.M., "A Multilayer Graph Approach to Correlating Network events with Operational Mission Impact," *Proceedings of the 75th MORS Symposium*, 12-14 June, 2007, Annapolis, Maryland, USA. [CCR]

Kleeman, M.P., Lamont, G.B., Hopkinson, K.M., Graham, S.R., "Multiobjective Evolutionary Algorithms for Designing Capacitated Network Centric Communications," *Proceedings of the ACM Genetic and Evolutionary Computation Conference 2007*, 7-11 July 2007, London, England, 1 page in length.

Kleeman, M., Lamont, G., Hopkinson, K., Graham, S., "Solving Multicommodity Capacitated Network Design Problems using a Multiobjective Evolutionary Algorithm," *Proceedings of the 2007 IEEE Computational Intelligence for Security and Defense Applications*, 1-5 April 2007, Honolulu, Hawaii, USA, pp 33-41.

Liao, G., Hopkinson, K.M., Tang, J., Ding, L., Wang, X., "A Simulation Study of a Substation Automation Communication System Based on Ethernet Technology," *IEEE 2006 International Conference on Power System Technology*, 22-26 Oct 2006, Chongqing, China, 7 pages in length, Proceedings ID C0958.

**KIM, YONG C.,**

Bradley D. Christiansen, Yong C. Kim, Robert W. Bennington, and Christopher J. Ristich, "Decoy Circuits for FPGA Design Protection," *IEEE International Conference on Field Programmable Technology*, pp 373-376, Dec., 2006, Bangkok, Thailand.

Jesse Somann and Yong C. Kim, "Classification of In-Phase/Quad-Phase (I/Q) Digital Downconversion Via Special Sampling Scheme (SSS)" *IEEE International Conference on Electronics, Circuits, and Systems*, pp-453-456, Nice, France, Dec 2006.

**KURKOWSKI, STUART, H., LtCol,**

W. Navidi, S. Kurkowski, and T. Camp., "Scenario Standards for Rigorous MANET Routing Protocol Evaluation," In proceedings of the *3rd IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)*, pages 256-266, October, 2006.

**LAMONT, GARY B.,**

Ian Price and Gary Lamont, "Genetic Algorithm Directed Self-Organized Search and Attack UAV Swarms," *Winter Simulation Conference*, pp 1307-1315, December, 2006

H. Eskandari, G. Geiger, and Gary Lamont, "FastPGA: A Dynamic Population Sizing Approach for Solving Expensive Multiobjective Optimization Problems, *4<sup>th</sup> Int'l Conference on Evolutionary Multi-Criterion Optimization*, pp 141-155, Matsushima, Japan, March, 2007

Mark Kleeman, Gary Lamont, Adam Cooney and Thomas Nelson, "A Multi-tiered Memetic Multiobjective Evolutionary Algorithm for the Design of Quantum Cascade Lasers, *4<sup>th</sup> Int'l Conference on Evolutionary Multi-Criterion Optimization*, pp 186-200, Matsushima, Japan, March, 2007

Mark P. Kleeman and Gary B. Lamont, "The Multi-objective Constrained Assignment Problem," *SPIE Defense and Security Symposium*, pp 656306-1 to 656306-13, March, 2007

Michael Peterson, Gary Lamont, Frank Moore, and Patrick Marshall, "Evolving Military-Grade Image Transforms Using State-of-the-Art Variation Operators," *SPIE Defense and Security Symposium*, pp 65630H-1 to 65630H-12, March, 2007

Mark Kleeman, Gary Lamont, Kenneth Hopkinson, Scott Graham, "Solving Multicommodity Capacitated Network Design Problems using a Multiobjective Evolutionary Algorithm, *2007 IEEE Symposium Series on Computational Intelligence, CISDA*, pp 33-41, April, 2007 (*Best Paper Award Nominee*)

Gary Lamont, James Slear, Kenneth Melendez, "UAV swarm mission planning and routing using multi-objective evolutionary algorithms, *2007 IEEE Symposium Series on Computational Intelligence, MDCM*, pp 10-20, April, 2007

Charles Haag, Gary Lamont, Paul Williams, and Gilbert Peterson, "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed Computer Network Intrusion, *ACM Genetic and Evolutionary Computation Conference (GECCO)*, London, England, July, 2007.

Mark Kleeman and Gary Lamont, "Multiobjective Evolutionary Algorithms for Designing Capacitated Network Centric Communications, *ACM Genetic and Evolutionary Computation Conference (GECCO)*, London, England, July, 2007

Michael Peterson, Gary Lamont, and Frank Moore, "Targeted Filter Evolution for Improved Image Reconstruction Resolution," *ACM Genetic and Evolutionary Computation Conference (GECCO)*, London, England, July, 2007

C. Haag, G. Lamont, P. Williams, and G. Peterson, "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed computer Network Intrusions," *6th International Conference on Artificial Immune Systems (ICARIS 2007)*, August, 2007, Santos, Brazil

#### **MARTIN, RICHARD K.,**

Martin, R. K. , Vanbleu, K. and Ysebaert, G., "Bit Error Rate Minimizing Channel Shortening Equalizers for Single Carrier Cyclic Prefixed Systems," *Proc. International Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, Honolulu, Hawaii, April 2007, vol. 3, pp. 121-124.

Martin, R. K. and Kragh, F. E., "Analysis Of Pseudo-Random Timing For Low Observable Communication Signals," *Proc. VIII IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Helsinki, Finland, June 2007, 5 pages.

Walsh, J. M., Martin, R. K., and Johnson, Jr., C. R., "Convergence and Performance Issues for Autocorrelation Based Adaptive Channel Shorteners," *Proc. 40th Asilomar Conf. on Signals, Systems, and Computers*, (invited session on adaptive filters), Pacific Grove, CA, November 2006, pp. 238-242.

Martin, R. K., "Proportionate Adaptation and Partial Updates in Constrained Adaptive Filters," *Proc. 40th Asilomar Conf. on Signals, Systems, and Computers*, (invited session on sparse adaptive filters), Pacific Grove, CA, November 2006, pp. 1380-1384.

#### **MAYER, CHRISTOPHER B.,**

G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "An Analysis of Mobility Performance Using Inverted Skip Graphs," *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, August 2007, Philadelphia PA.

G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "Enabling Skip Graphs to Process k-Dimensional Range Queries In A Mobile Sensor Network," *6th IEEE International Symposium on Network Computing and Applications (IEEE NCA07)*, Cambridge MA, July 2007, pp. 273-282.

Adrian DeFietas and Christopher B. Mayer, "The Effectiveness of Dynamic Ant Colony Tuning," *Genetic and Evolutionary Computation Conference (GECCO)*, ACM, 2007.

#### **MCDONALD, J. TODD., LtCol**

Yasinsac, A. and McDonald, J. T., "Towards Working with Small Atomic Functions," *Proceedings of the Fifteenth International Workshop on Security Protocols*, Brno, Czech Republic, 18-20 April 2007.

McDonald, J. T. and Yasinsac, A., "Applications for Provably Secure Intent Protection with Bounded Input-Size Programs," *In Proceedings of the International Conference on Availability, Reliability and Security (ARES 2007)*, April 10-13, 2007.

McDonald, J. T. and Yasinsac, A., "Program Intent Protection Using Circuit Encryption," *Proceedings of the 8th International Symposium on System and Information Security*, Sao Jose dos Campos, Sao Paulo, Brazil, November 8-10, 2006

**MILLS, ROBERT F.,**

Beard, T.W., Temple, M.A., Miller, J.O., Mills, R.F., and Raquet, J.F., "Using Genetic Algorithms for SMSE Waveform Design," *IEEE Int'l Waveform Diversity & Design Conf (WDD 2007)*, Pisa, Italy, Jun 2007. [CCR]

Wong-Jiru, A., Colombi, J., Suzuki, L., and Mills, R., "Graph Theoretical Analysis of Network Centric Operations Using Multi-Layer Models," *5th Annual Conference on Systems Engineering Research*, Hoboken, New Jersey, March 14-16, 2007. [CSE] [CCR]

Mullins, B.E., Lacey, T.H., Mills, R.F., Trechter, J.M., Bass, S.D., "The Impact of the NSA Cyber Defense Exercise on the Curriculum at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-9. [CCR]

Levoy, T.E., Grimala, M.R., and Mills, R.F., "A Methodology For Customizing Security Auditing Templates For Malicious Insider Detection," *8th International Symposium on System and Information Security*, Nov 2006. (40 of 140) [CCR]

Rehm, C.R., Temple, M.A., Mills, R.F., and Raines, R.A., "Entropy-Based Spectral Processing on the 802.11a Waveform," *2006 Military Communications Conf (MILCOM 2006)*, Oct 2006. [CCR]

Bass, S., Mills, R. and Seetharaman, G., "Challenges of Information Management in the Networked Battlespace," *Proceedings of the Second International Conference on Innovative and Commercial Applications of Distributed Sensor Networks*, Crystal City, VA, Oct 16-17 2006. [CCR]

**MULLINS, BARRY E.,**

Todd, A. D., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Rogers, S. K., "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007, 10<sup>th</sup> International Symposium*, 5-7 September 2007, Queensland Australia. [CCR]

Birrer, B. D., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Bennington, R. F., "Program Fragmentation as a Metamorphic Software Protection," *The Third International Symposium on Information Assurance and Security*, Manchester, United Kingdom, 29-31 August 2007, pp. 369-374. [CCR]

Montminy, D. P., Baldwin, R. O., Williams, P. D. and Mullins, B. E., "Using Relocatable Bitstreams for Fault Tolerance," *NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007, pp. 701-708. [CCR]

Brault, G. J., Augeri, C. J., Mullins, B. E., Mayer, C. B. and Baldwin, R. O., "Assessing Standard and Inverted Skip Graphs Using Multi-Dimensional Range Queries and Mobile Nodes," *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, August 2007, Philadelphia PA. [CCR]

Brault, G. J., Augeri, C. J., Mullins, B. E., Baldwin, R. O. and Mayer, C. B., "Enabling Skip Graphs to Process k-Dimensional Range Queries In A Mobile Sensor Network," *6th IEEE International Symposium on Network Computing and Applications (IEEE NCA07)*, Cambridge MA, July 2007, pp. 273-282. [CCR]

Fraser, N. A., Kelly, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," *2007 IEEE International Communications Conference*, Glasgow Scotland, June 2007, pp. 1-6. [CCR]

- Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "An Analysis of XML Compression Efficiency," *Workshop on Experimental Computer Science*, San Diego CA, 13-14 Jun 2007, pp. 1-12. [CCR]
- Shaw, A. K., Mills, R. F., Mullins, B. E. and Hopkinson, K. M., "A Multilayer Graph Approach to Correlating Network Events with Operational Mission Impact," *75<sup>th</sup> Military Operations Research Society Symposium (MORSS)*, Annapolis MD, June 2007. [CCR]
- Hyland, M. T., Mullins, B. E., Baldwin, R. O. and Temple, M. A., "Modeling Geographic Routing Protocols in a Swarm of Unmanned Aerial Vehicles," *IEEE International Symposium on Pervasive Computing and Ad Hoc Communications (PCAC-07)*, Niagara Falls, Canada, May 2007, pp. 249-256. [CCR]
- Seyba, J. R., Mullins, B. E. and Bonafede, G. L., "Audio-Video Capacity of an IEEE 802.11g Wireless LAN," *2007 International Symposium on Collaborative Technologies and Systems (CTS 2007)*, Orlando FL, May 2007, pp 372-378. [CCR]
- Mullins, B. E., Lacey, T. H., Mills, R. F. and Raines, R. A., "The Morphing of a Cyber Operations Curriculum at AFIT," *IAnewsletter - The Newsletter for Information Assurance Technology Professionals*, Information Assurance Technology Analysis Center, Falls Church, VA, Vol. 10, No. 1, Spring 2007, pp. 26-30. [CCR]
- Mann, C., Baldwin, R. O. and Mullins, B. E., "Wireless Sensor Networks: Guidelines for Development and a Survey of Current Research," *accepted for publication in the 10th Communication and Networking Simulation Symposium (CNS '07)*, Norfolk, VA, March 2007, pp. 41-50. [CCR]
- Mullins, B. E., Lacey, T. H., Mills, R. F., Trechter, J. M. and Bass, S. D., "The Impact of the NSA Cyber Defense Exercise on the Curriculum at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-9. [CCR]
- Kautz, J. T., Mullins, B. E., Baldwin, R. O. Graham, S. R., "An Adaptable Energy-Efficient Medium Access Control Protocol for Wireless Sensor Networks," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-6. [CCR]
- Augeri, C. J., Morris, K. M. and Mullins, B. E., "HARVEST: A Framework and Co-Simulation Environment for Analyzing Unmanned Aerial Vehicle Swarms," *IEEE Military Communications Conference (MILCOM 2006)*, Washington DC, October 2006, pp. 1-7. [CCR]

## **PACHTER, MEIR**

- M. Pachter: S. Dharba and P. Chandler: "Optimal Sequential Inspection," *Proceedings of the 45<sup>th</sup> Conference on Decision and Control*, December 13-15, 2006, San Diego, CA. Paper FrIP2.4.
- M. Pachter: S. Dharba and P. Chandler: "Sequential Inspection Using Loitering," *Proceedings of the 7<sup>th</sup> International Conference on Cooperative Control and Optimization*, January 31-February 2, 2007, Gainesville, FL.
- M. Pachter: "A New Tracking Filter Paradigm," *Proceedings of the 47<sup>th</sup> Israel Conference on Aerospace Sciences*, Tel Aviv, Israel, February 21-22, 2007.
- M. Veth and M. Pachter: "Correspondence Search Mitigation Using Feature Space Anti-Aliasing," *Proceedings of the 63<sup>rd</sup> Annual Meeting of the Institute Of Navigation*, Cambridge, MA, April 23-25, 2007.
- M. Pachter, M. Nielsen and J. Raquet: "INS Aiding Using Bearings-Only Measurements of Known Ground Objects," *Proceedings of the 17<sup>th</sup> IFAC Symposium on Automatic Control in Aerospace*, June 25-29, Toulouse, France.

- A. Girard, M. Pachter and P. Chandler: "Stochastic Dynamic Programming for Uncertainty Handling in UAV Operations," *Proceedings of the American Control Conference*, July 11-13, 2007, New York, NY.
- S. Dharba and M. Pachter: "A Lagrangian-Based Approach for a Multiple Depot, Multiple Travelling Salesmen Problem," *Proceedings of the American Control Conference*, July 11-13, 2007, New York, NY.
- M. Pachter, S. Dharba and P. Chandler: "Nonlinear Control of Sequential Inspection Operations," *7<sup>th</sup> IFAC Symposium on nonlinear Control Systems*, Pretoria, South Africa, 22-24 August 2007.

#### **PETERSON, GILBERT L.**

- Woolley, B. and Peterson, G.L., Genetic Evolution of Hierarchical Behavior Structure, *GECCO 2007*, London, July 2007. (accepted March 2007). [ANT]
- Haag, C., Lamont, G.B., Williams, P., and Peterson, G.L., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed Computer Network Intrusions," *Workshop on Defense Application of Computation Intelligence at GECCO 2007*, London, July 2007. (accepted February 2007). [CCR]
- Haag, C., Lamont, G.B., Peterson, G.L., and Williams, P., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed computer Network Intrusions," *ICARIS 2007*, (accepted May 2007). [CCR]
- Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Multi-Class Classification Averaging Fusion for Detecting Steganography," *2007 IEEE International Conference on System of Systems Engineering*, San Antonio, TX, April 16-17, 2007, pp 309-314. [CCR]
- Peterson, G.L., Raines, R.A., and Baldwin, R.O., "Graduate Digital Forensics Education at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, pp. 264-270. [CCR]
- Rodriguez, B.M., Peterson, G.L., Bauer, K.B., and Agaian, S.S., 2006, "Steganalysis Embedding Percentage Determination with Learning Vector Quantization," *2006 IEEE International Conference on Systems Man and Cybernetics*. October 8-11, 2006, Taipei, Taiwan, pp. 1956-1961. [CCR]

#### **RAINES, RICHARD A.,**

- A. D. Todd, R. A. Raines, R. O. Baldwin, B. E. Mullins, and S. K. Rogers, "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007*, 10<sup>th</sup> International Symposium, Queensland Australia September 2007, 13 pp (CD). [CCR]
- B. D. Birrer, R. A. Raines, R. O. Baldwin, B. E. Mullins, and R. W. Bennington, "Program Fragmentation as a Metamorphic Software Protection," *The Third International Symposium on Information Assurance and Security*, Manchester, England, August 2007, pp. 369-374. [CCR]
- N. A. Fraser, D. J. Kelly, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," *2007 IEEE International Communications Conference*, Glasgow Scotland, June 2007, 6 pages (CD). [CCR]

- K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *The International Conference on Information Warfare and Security*, Monterey, CA, March 2007, pp. 47-56. [CCR]
- T. S. Smith, P. L. Woolley, R. F. Mills, and R. A. Raines, "A Framework for Relating Cyberspace Operations to the Cognitive and Physical Domains," *The International Conference on Information Warfare and Security*, March 2007, pp. 217-224. [CCR]
- A. D. Todd, J. A. Benson, G. L. Peterson, T. P. Franz, M. R. Stevens, and R. A. Raines, "An Analysis of Forensic Tools in Detecting Rootkits and Hidden Processes," the *Third IFIP WG 11.9 International Conference on Digital Forensics*, January 2007, 8 pages (CD). [CCR]
- K. S. Edge, R. A. Raines, R. O. Baldwin, M. A. Grimaila, and R. Bennington, "The Use of Attack and Protection Trees to Analyze Security for an Online Banking System," the *Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, 8 pages (CD). [CCR]
- G. L. Peterson, R. A. Raines, and R. O. Baldwin "Graduate Digital Forensics Education at the Air Force Institute of Technology," the *Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, 8 pages (CD). [CCR]
- K. S. Edge, G. S. Dalton, R. A. Raines, and R. F. Mills, "Using Attack and Protection Trees to Analyze Threats and Defenses to Homeland Security," *The 2006 Military Communications Conference (MILCOM)*, Washington DC, October 2006, 7 pages (CD). [CCR]
- C. R. Rehm, M. A. Temple, R. A. Raines, and R. F. Mills, "Entropy-based Spectral Processing on the IEEE 802.11a OFDM Waveform," accepted for presentation and publication in the *2006 IEEE Military Communications Conference (MILCOM)*, Washington DC, October 2006, 5 pages (CD). [CCR]

#### **RAQUET, JOHN F.,**

- Dainty, B., J. Raquet, and R. Beckman, "Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation," *Proceedings of ION GNSS-2007*, Fort Worth, TX, Sep 2007. [ANT Center]
- Raquet, J., M. Miller, and T. Nguyen, "Issues and Approaches for Navigation Using Signals of Opportunity," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT Center]
- Amt, J. and J. Raquet, "Flight Testing of a Pseudolite Navigation System on a UAV," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT Center]

#### **SAVILLE, MICHAEL A., Maj,**

- Jawad Farooq, Michael A. Temple, and Michael A. Saville, "Application of Frequency Diverse Arrays to Synthetic Aperture Radar Imaging," accepted for *IEEE International Conference on Electromagnetics in Advanced Applications*, Torino, Italy, Sep 17-21, 2007.
- Seng Hong, Michael A. Saville, Chad Simpson, and Patrick Marshall, "Investigation on Genetic Algorithm for Countermeasure Technique Generator," accepted for *URSI International Symposium on Systems, Signals, and Electronics*, Montreal, Quebec, Jul 30 to Aug 2, 2007.

#### **SEETHARAMAN, GUNA S.,**

- A. Hafiane, G. Seetharaman, and B. Zavidovique, "Median Based Binary Localized Binary Patterns for Texture Classification," *Image Analysis and Recognition*, Springer Verlag LNCS 4633, pp. 387-398, August 2007, *International Conference ICIAR*, Montreal, Canada, August 22-24, 2007.

G. Seetharaman and B. Zavidovique, "Scan adaptive techniques for Image Analysis," *Fourth International Conference on Applied Mathematics and Computing*, Plovdiv, Bulgaria. August 12-18, 2007.

F. Bunyak, K. Palaniappan, S. K. Nath and G. Seetharaman, "Geodesic Active Contour Based Fusion of Visible and Infrared Video for Persistent Object Tracking," *IEEE Workshop Applications of Computer Vision*, Austin, TX, Feb 21-22, 2007.

S. Bass, R. Mills and G. Seetharaman, "Challenges of Information Management in the Networked Battlespace," *Proceedings of the Second International Conference on Innovative and Commercial Applications of Distributed Sensor Networks*, Crystal City, VA, Oct 16-17 2006.

G. Seetharaman and M. Talbert, "Critical Long-term Challenges in Distributed Sensor Networks for Persistent Surveillance and Response," *Proceedings of the Second International Conference on Innovative and Commercial Applications of Distributed Sensor Networks*, Crystal City, VA, Oct 16-17 2006.

**TEMPLE, MICHAEL A.,**

J. Farooq, M.A. Temple, M.A. Saville and M.E. Oxley, "Application of Frequency Diverse Arrays to Improve SAR Image Resolution," *2007 International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Torino, Italy, 17-21 Sep 07.

T.W. Beard, M.A. Temple, J.O. Miller, R.F. Mills and J.F. Raquet, "Using Genetic Algorithms for Spectrally Modulated Spectrally Encoded Waveform Design," *3<sup>rd</sup> IEEE Int'l Waveform Diversity & Design Conf (WDD 2007)*, Pisa, Italy, 4-8 Jun 07.

V. Chakravarthy, Z. Wu, A. Shaw, M.A. Temple, R. Kannan, and F. Garber, "A General Overlay/Underlay Analytic Expression Representing Cognitive Radio Waveform," *3<sup>rd</sup> IEEE Int'l Waveform Diversity & Design Conf (WDD 2007)*, Pisa, Italy, 4-8 Jun 07, Accepted: Mar 07.

T.W. Beard, M.A. Temple and M.L. Roberts, "An Experimental Design Approach for Optimizing SMSE Waveforms to Minimize Coexistent Interference," *2007 IEEE Int'l Conf on Communications (ICC 2007)*, Glasgow, Scotland, 24-28 Jun 07.

Hyland, M. T., Mullins, B. E., Baldwin, R. O. and Temple, M. A., "Modeling Geographic Routing Protocols in a Swarm of Unmanned Aerial Vehicles," *IEEE International Symposium on Pervasive Computing and Ad Hoc Communications (PCAC-07)*, Niagara Falls, Canada, May 2007, pp. 249-256.

U. Majumder, M.A. Temple, M. Minardi and E.G. Zelnio, "Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular SAR," *2007 IEEE Radar Conference*, Waltham, MA, Apr 07, pp. 729-733.

J. Fowler, M.A. Temple, M.A. Havrilla and J. Akerson, "Characterization of ZDC Removal Tech for ISAR Apps," *2007 IEEE Radar Conference*, Waltham, MA, Apr 07, pp. 800-804.

C.R. Rehm, M.A. Temple, R.F. Mills and R.A. Raines, "Entropy-Based Spectral Processing on the 802.11a Waveform," *2006 Military Communications Conference (MILCOM 2006)*, Washington, D.C., Oct 06, pp. 1-5.

**TERZUOLI, ANDREW J., JR.,**

T. L. Pitzer, J. A. Fellows, G. B. Lamont, A. J. Terzuoli, Jr., "Linear Ensemble Antennas Resulting from the Optimization of Log Periodic Dipole Arrays Using Genetic Algorithms," *Proceedings of the IEEE World Congress on Computational Intelligence*, Vancouver, BC, Canada, 16-21 July 2006.

A. Griffith, A. Terzuoli, D. Wicker, "Loaded Vehicle Signature Analysis Using Minimum Mean Square Error Criteria," *Proceedings of the National Signatures Program - Advances Signatures Technology Symposium* (NSP-ASTS), Dayton, Ohio, 7-9 Nov 2006.

R. J. Barton, P. J. Collins, P. E. Crittenden, M. J. Havrilla, A. J. Terzuoli, "A Compact Passive Broadband Hexagonal Spiral Antenna Array," *Proceedings of the 2007 IEEE AP-S International Symposium*, Honolulu, HI, 10-15 June 2007.

R. J. Barton, P. J. Collins, P. E. Crittenden, M. J. Havrilla, A. J. Terzuoli, "A Compact Passive Ultra-Wideband Hexagonal Spiral Array Antenna for VHF Remote Sensing Applications," *Proceedings of the 2007 IEEE International Geoscience and Remote Sensing Symposium*, Barcelona, SP, 23-27 July 2007.

**TOUSSAINT, GREGORY J., LtCol,**

Toussaint, G. J., De Lima, P., and Pack, D. J., "Localizing RF Targets with Cooperative Unmanned Aerial Vehicles," *Proceedings of the American Control Conference*, New York, New York, 9 -13 July 2007, pp. 5928-5933.

**VETH, MICHAEL J., Maj,**

Veth, M., "Fusing Imaging and Inertial Systems for Passive Navigation", presented at the *NASIC Disruptive Digital Conference*, Dayton, OH, October 2006. [ANT]

Fletcher, J. and Veth, M., "Real-Time Fusion of Image and Inertial Sensors for Navigation", presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Veth, M. and Pachter, M., "Correspondence Search Mitigation Using Feature Space Anti-Aliasing", presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Ebcin, S. and Veth, M., "Tightly-Coupled Image Aided Navigation Using the Unscented Kalman Filter", presented at the *2007 ION GNSS Meeting*, Ft. Worth, TX, September 2007. [ANT]

**WILLIAMS, PAUL D., Maj,**

Stevens, Michael, Williams, Paul D., "Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors," *Computational Intelligence in Security and Defense Applications*, 2007. CISDA 2007. IEEE Symposium on, Honolulu, HI, USA, April 2007, pp. 193-200. [CCR]

Stephen Mott, Samuel Hart, David Montminy, Paul Williams, Rusty Baldwin, "A Hardware-based Architecture to Support Flexible Real-Time Parallel Intrusion Detection," *Proc. 2007 IEEE International Conference on System of Systems Engineering (SoSE)*, 2007. [CCR]

D. P. Montminy, R. O. Baldwin, P. D. Williams, and B. E. Mullins, "Using Relocatable Bitstreams for Fault Tolerance," accepted for publication at the *2nd NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007. [CCR]

Haag, C., Lamont, G.B., Williams, P., and Peterson, G.L., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed Computer Network Intrusions," *Workshop on Defense Application of Computation Intelligence at GECCO 2007*, London, July 2007. (accepted February 2007). [CCR]

Haag, C., Lamont, G.B., Peterson, G.L., and Williams, P., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed computer Network Intrusions," *ICARIS 2007*, (accepted May 2007). [CCR]

## **REFEREED CONFERENCE PUBLICATIONS BASED ON ABSTRACT REVIEW**

### **HAVRILLA, MICHAEL J.,**

G. Hilderbrand, R. Niezgoda and M. Havrilla, "Multi-short calibration technique for VHF material property characterization at elevated temperatures," *Have Forum Conference Abstracts*, Eglin Air Force Base, Florida, April 2007.

### **MENDENHALL, MICHAEL J., Maj**

M. Mendenhall, "A Joint Classification and Compression System: Processing hyperspectral imagery onboard storageless reconnaissance platforms to support real-time decision making," *IEEE International Conference on System of Systems Engineering*, San Antonio, TX, 16-18 April, 2007.

J. Blackburn, M. Mendenhall, A. Rice, P. Shelnutt, N. Soliman, and J. Vasquez, "Feature Aided Tracking with Hyperspectral Imagery," *Proceedings of the SPIE, Signal and Data Processing of Small Targets*, August 2007

### **MILLS, ROBERT F.,**

Shaw, A., Mills, R.F., Mullins, B.E., and Hopkinson, K.M., "A Multilayer Graph Approach to Correlating Network Events with Operational Mission Impact," *75th Military Operations Research Society Symposium (MORSS), Annapolis MD, 12-14 June 2007*. [CCR]

Hamill, J.T., Deckro, R.F., Chrissis, J.W., and Mills, R.F., "An Interpersonal Influence Representation in Social Network Flow Modeling," *INFORMS Pittsburgh*, Pittsburgh PA, Nov 2006.

### **MULLINS, BARRY E.,**

Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "Logarithmic Coloring: How Hard is it to Determine Isomorphism?," *44th Midwestern Graph Theory Conference (MIGHTY)*, Wright State University, Dayton, OH, 11–12 May 2007.

Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "An Algorithm for Determining Isomorphism," presented at the *38th Southeastern International Conference on Combinatorics, Graph Theory, and Computing (CGTC)*. Boca Raton, FL, 5–9 March 2007.

### **PETERSON, GILBERT L.,**

Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Steganography Anomaly Detection Using Simple One Class Classification," In *Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 9-13 April 2007, pp. 6579015.1-6579015.6. [CCR]

Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Steganalysis Feature Improvement Using Expectation Maximization," In *Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 9-13 April 2007, pp. 6575030.1-6575030.6. [CCR]

### **SCHMIDT, JASON D., Capt**

Louthain, J.A. and Schmidt, J.D., "Anisoplanatic Approach to Airborne Laser Communication," *Proceedings of SENSIAC Symposium of the Specialty Group on Active E-O Systems*, Sep 2007.

Schmidt, J.D., Goda, M.E., and Duncan, B.D., "Emulating Atmospheric Turbulence with LC SLMs," *Proceedings SPIE Optics & Photonics Conference*, Aug 2007.

Venema, T.M. and Schmidt, J.D., "An Improved Temporally Phase-Shifted SRI Design," *Proc. SPIE Optics & Photonics Conference*, Aug 2007.

**TEMPLE, MICHAEL A.,**

W.C. Suski, M.A. Temple, R.W. Klein, "Collecting, Characterizing and Analyzing Emission Features of Commercial Wireless Transceivers," *2007 Advanced Signature Technology Symposium*, Naval Post Graduate School, Monterey, CA, Sep 07.

U.K. Majumder, M.A. Temple, M.J. Minardi, and E.G. Zelnio<sup>+</sup>, "3D Point Spread Function Characterization of a Radially Displaced Scatterer Using Circular Synthetic Aperture Radar," *SPIE Defense & Security Symposium*, Orlando FL, Apr 2007.

M.E. Holston, M.J. Minardi, M.A. Temple, and M.A. Saville, "Characterizing Geolocation Ambiguity Responses in Synthetic Aperture Radar – Ground Moving Target Indication," *SPIE Defense & Security Symposium*, Orlando FL, Apr 2007.

**TERZUOLI, ANDREW J., JR.**

S. C. Gustafson, E. A. James, "Non-Gaussian Radar Clutter Characterization Using a Mixture of Two Rayleigh Probability Densities," *Proceedings of the IRI/COST296 workshop "Ionosphere – Modeling, Forcing and Telecommunications"*, Praha, CZ, 10-14 July 2007.

**VASQUEZ, JUAN R., LtCol,**

T. Venema and J. Vasquez, "Kalman Estimation of Anisoplanatic Zernike Tilt," *Ninth Annual Directed Energy Symposium*, 2006.

J. Blackburn, M. Mendenhall, A. Rice, P. Shellnut, N. Soliman, and J. Vasquez, "Feature Aided Tracking with Hyperspectral Imagery," *Proceedings of the SPIE, Signal and Data Processing of Small Targets*, August 2007.

B. Secrest and J. Vasquez, "A Real-Time Open-Source Video Tracking System," *SPIE Defense and Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI*, 2007.

**VETH, MICHAEL J., Maj,**

Fletcher, J. and Veth, M., "Real-Time Fusion of Inertial and Imaging Sensors for Navigation", presented at the *2007 Joint Navigation Conference*, Orlando, FL, April 2007. [ANT]

**WILLIAMS, PAUL D., Maj,**

Stephen Mott, Paul Williams, "Creating Hardware-based Primitives That Facilitate the Exposure of State Information Useful for Security Related Monitoring," *Proceedings of the 2007 International Conference on Information Warfare and Security*; Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007. [CCR]

### **5.2.8. SUBSTANTIAL CONSULTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BALDWIN, RUSTY O.**

Baldwin, Rusty O., "Wound Treatment Study (Consultant)," Wright-Patterson Medical Center (SGCQW), Sep 07

#### **COLLINS, PETER J.,**

Collins, Peter J., "Faraday cage performance in a secure communication application for transferring sensitive criminal evidence information," Defiance College, OH, Nov 2006 - Jul 2007.

Collins, Peter J., Consultant to AFRL on new radar acquisition and associated AFIT/AFRL MOA, Dr. Brian Kent, AFRL/SN LO Chief Scientist, Nov 2006 - present.

Collins, Peter J., Advised AFRL on AFIT Low Observable Program personnel issues and a possible solution, William Cuzick, Director Signature Technology Office, 21 Sep 2006.

Collins, Peter J., Regular consultant for various classified programs, AFRL/SNS, 18 Sep 2006 - present.

Collins, Peter J., Regular consultant for various classified programs, SAF/OR, 18 Sep 2006 - present.

#### **DAVIS, NATHANIEL J. DAVIS, IV**

Davis, Nathaniel J. IV., "HQDA 2007 Army Basic Research Review (Board Member)," US Army, 30-31 May, Crystal City, VA

Davis, Nathaniel J. IV., "Patent Infringement Litigation Extreme Networks, Inc. v. Enterasys Networks, Inc., (Expert Witness)," United States District Court for the Western District of Wisconsin, February 2007-present.

#### **LAMONT, GARY B.,**

Lamont, Gary B., Marshall, Partick, Ewing, Robert F., "Optimal Image Communication via Wavelets and Genetic Algorithms (Consultant)," AFRL/IFTA, October, 2006 - September, 2007

Lamont, Gary B. and Foster, Mike, "Bio-Inspired UAV Behavioral Development and Parallel Simulation (Consultant)," AFRL/SNZW, October, 2006 - September, 2007

Lamont, Gary B., Nelson, Thomas, Cooney, and Adam, "Optimization of Low Power Cascade Laser Design through Multiobjective Evolutionary Algorithms (Consultant)," AFRL/SND, October, 2006 - September, 2007

#### **MAYER, CHRISTOPHER B., Maj,**

Mayer, Christopher B., and Majumder, Uttam K., "Prototype software application and database system for managing synthetic aperture radar data," AFRL/SNAS, June-September 2007.

#### **MILLS, ROBERT F.**

Mills, R.F., Raines, R.A., Hopkinson, K.M., Grimaila, M.R., and Baldwin, R.O., "Technical Support, Information/Cyber Operations," Air Force Information Operations Center, Nov 2006-Sep 2007. [CCR]

Mills, R.F., and Peterson, G.L., "Insider Threat Research," National Security Agency, Oct 2006-Sep 2007. [CCR]

**MULLINS, BARRY E.,**

Mullins, B. E., "AF Communication Systems Modeling," Air Force Communications Agency, April 2007 – September 2007. [CCR]

Mullins, B. E., Baldwin, R. O. and Temple, M. A., "Technical Support: Ground Mobile Objective Gateways (GMOG)," Air Force Research Lab – Munitions Directorate, June 2006 – September 2007. [CCR]

**PACHTER, MEIR**

Pachter, Meir, "Cooperative Control of UAVs (Consultant)," AFRL/VACA, July-September 2007

Pachter, Meir, "Estimation & System Identification (Consultant)," AFOSR, proposal review, June 2007

**RAQUET, JOHN F.,**

Raquet, John F., "Inertial Navigation System Modeling for Cruise Missiles (Consultant)," Office of Naval Analysis, May 2007

**SAVILLE, MICHAEL A., Maj,**

Saville, Michael A., "Program ECM Techniques Generator," AFOSR Program Review with Sensors Directorate, Air Force Research Laboratory, Apr.-May 2007.

Saville, Michael A., "Investigation on SAR Countermeasures (Reviewer)," AFRL/SNSA Draft Proposal to National Reconnaissance Office, Aug. 2007.

Saville, Michael A., "Electronic Warfare Threat Assessment (Board Member)," Analysis Murder Board, National Air and Space Intelligence Center, Aug.-Nov. 2007.

**TERZUOLI, ANDREW J., JR.**

Terzuoli, Andrew J., Jr., "Wright Patt MASINT Development Consortium (WPMDC) (Consultant)" with NASIC/DEM, Jan 2005-Present

Terzuoli, Andrew J., Jr., "Wright Patt Passive Radar Working Group (PRWG) (Consultant)" with NASIC/AD, Jan 2002 - Present

Terzuoli, Andrew J., Jr., "Wright Patt Over the Horizon Radar (OTHR) (Consultant) Working Group" with NASIC/AD & DE, June 2007 - Present

Terzuoli, Andrew J., Jr., "Harnessing Remote Sensed Data (Consultant)" with NASIC/SCX June 2007-Present

Terzuoli, Andrew J., Jr., "RF Sensor Enhancement (Consultant)" with AFRL/SNR June 2003 - Present

**VASQUEZ, JUAN R., LtCol,**

Vasquez, Juan R., "Missile Warning Tracker Development," Defense Research Associates, Jan.-Nov. 2007.

**WILLIAMS, PAUL D., Maj,**

Williams, Paul D., "Cyber Force Development--Cyber Education and Training," By-name designee to develop the knowledge, skills, and ability training requirements for the future cyber warfare forces, supported HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007, [CCR]

Mills, Robert F. and Williams, Paul D., “Cyber Force Development--Cyber PME”, supported Dr. Mills in developing the cyber warfare doctrine and material required for PME for all Airmen, supported AU, HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007, [CCR]

#### **5.2.9. BOOKS AND CHAPTERS IN BOOKS**

##### **LAMONT, GARY B.,**

Mark P. Kleeman and Gary B. Lamont, “Scheduling of a Combined Flow-Shop, Job-Shop Scheduling Problem using an MOEA with a Variable Length Chromosome,” in *Evolutionary Scheduling*, Chapter 3, pages 49-99, 51 pages, Springer Verlag, Volume 49 of the Book Series on Studies in Computational Intelligence, ISBN 978-3-540-48582-7, 2007.

Mark P. Kleeman and Gary B. Lamont, “Evolutionary Multi-Objective Optimization in Assignments Problems,” in *Multi-Objective Optimization in Computational Intelligence: theory and Practice*, 29 pages, IRM Press, 2007

Mark P. Kleeman and Gary B. Lamont, “Evolutionary Multi-Objective Optimization in Military Applications,” in *Multi-Objective Optimization in Computational Intelligence: Theory and Practice*, 47 pages, IRM Press, 2007

##### **MAYER, CHRISTOPHER B., Maj,**

Christopher B. Mayer and K. Selçuk Candan, “Large-scale ASP Replication of Database-driven Portals,” *Encyclopaedia of Portal Technology and Applications*, Arthur Tatnall ed., April 2007.

#### **5.2.10. PATENTS**

##### **MARTIN, RICHARD K.,**

Martin, R. K., Balakrishnan, J., Sethares, W. A., Chung, W., and Johnson, Jr., C. R., “Methods and system for equalizing data in multicarrier receiver systems,” United States Patent #7,230,984, granted on June 12, 2007.

#### **5.2.11. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **PUBLICATIONS AND PRESENTATIONS**

##### **COLLINS, PETER J.,**

Collins, Peter J., “AFIT HPC Site Review: Computational Electromagnetic Project,” Status briefing presented to the DoD High Performance Computing Office, 6 Jun 2007.

##### **FELLOWS, JAMES A., Lt Col**

Fellows, James A., “The Vital Role of Nano & Bio Technological Systems by 2025,” invited seminar, Air Education & Training Command Symposium, San Antonio, TX, 6 Sep 2007.

B. P. Feller, J. A. Fellows, D. A. Cardimona, “Voltage-Tunable Infrared Detector Design,” NATO Working Group for Space-based Infrared Sensing, Florence, Italy, 14-15 May 2007.

**KURKOWSKI, STUART H., LtCol,**

Kurkowski, Stuart H., "Toolkit for Visualizing Situation Scope," *Cyber Defense Conference*, Rome, NY. May 22, 2007 [CCR].

**LAMONT, GARY B.,**

Lamont, Gary B., "Multiobjective Evolutionary Algorithms In The Design Of Network-Centric Applications," *4<sup>th</sup> Int'l Conference on Evolutionary Multi-Criterion Optimization*, Matsushima, Japan, March, 2007. Keynote Address

**MENDENHALL, MICHAEL J., Maj,**

M. Mendenhall, P. Williams, and R. Raines, "Cyber Kill Chain", *Cyber Defense Conference 2007*, Rome NY, 2007.

**MILLS, ROBERT F.**

Mills, R.F., "Information Operations and Cyberspace", *Air Education and Training Command Symposium*, San Antonio, TX, 5-7 Sep 2007. [CCR]

Mills, R.F., Lacey, T.H., and Grimaila, M.R., "A Framework for Cyberspace Situational Awareness", *Cyber Defense Conference*, Griffiss Institute, Rome NY, 22-24 May 2007. [CCR]

Mills, R.F., "Trends in Communications/Radar Technologies: Challenges for the Intelligence Community" to National Air and Space Intelligence Center (NASIC) Workshop on Disruptive

Lacey, T., Mills, R., Mullins, B., and Raines, R., "The Morphing of a Cyber Operations Curriculum at AFIT", *IANewsletter, Information Assurance Technology Analysis Center*, Vol 10, Number 1, Spring 2007, pp 26-30. [CCR]

Wieser, T.L., Miller, G.J., Piepkorn, A., Kennedy, J., Mills, R.F., and Colombi, J.M., "Heuristics for Joint Architecting," *Defense AT&L Magazine*, Nov-Dec 2006, pp 44-48. [CSE]

Jones, C.O., Mills, R.F., and Raines, R.A., "Removing Security through Obscurity from Software Watermarking," *IANewsletter, Information Assurance Technology Analysis Center*, Vol 9, Number 2, Fall 2006, pp 14-17. [CCR]

**MULLINS, BARRY E.**

Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "Determining a Canonical Graph Isomorph Using Lexicographic Sorting," presented at the *Discrete Mathematics Seminar*, Department of Mathematics, Wright State University, Dayton, OH, 25 April 2007.

Lacey, T., Mills, R., Mullins, B., and Raines, R., "The Morphing of a Cyber Operations Curriculum at AFIT", *IANewsletter, Information Assurance Technology Analysis Center*, Vol 10, Number 1, Spring 2007, pp 26-30. [CCR]

**PACHTER, MEIR**

Pachter, Meir, "INS Aiding Using Bearings-Only Measurements of Known Ground Objects," Tel Aviv University, Tel Aviv, Israel, June 18, 2007, and Israel Institute of Technology, Haifa, Israel, June 20, 2007.

Pachter, Meir, "Cooperative Control and Estimation: Good and Good Lookin," AFOSR Contractors Meeting, August 9, 2007, Long Beach, CA.

**PETERSON, GILBERT L.**

Karrels, D., Peterson, G.L., and Williams, P., "Architecture for Deploying Lightweight Cybercraft," presented at the Cyber Defense Workshop, Rome, NY, April 2007. [CCR]

**RAINES, RICHARD A.,**

Cyberwarrior Training in Progress," *Defense Systems* interview, Sept/October 2007, pp. 12-16.

"Cyberspace Challenges: Present and Future," presented at the *AETC Symposium*, San Antonio, Texas, 6-7 September 2007.

"Education Opportunities Expand with Cyber Command," Air Force Times interview, July 16, 2007.

"Air Force Cyber Education," presented at the *Cyber Academics Thought Leadership Forum*, Omaha, Nebraska, June 2007.

"Cyber Threats and Challenges," 30 minute radio discussion presented on Clear Channel Radio, FM 93.3, Dayton, Ohio, May 20, 2007

"Cyber Threats, Challenges, and Future Technologies," presented at the *Future Technologies for the Warfighter Workshop*, Air Command and Staff College, Montgomery AL, April 2007.

"The Center for Cyberspace Research," presented to Mr. Michael J. Wynne, Secretary of the Air Force, Wright Patterson AFB OH, March 2007.

**RAQUET, JOHN F.,**

Raquet, J. and K. Cook, "Using Two-Way Time Transfer to Improve GPS Positioning Accuracy," presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT Center]

Amt, J. and J. Raquet, "High Precision Positioning Using Pseudolites at Non-GPS Frequencies," presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT Center]

**SEETHARAMAN, GUNA**

Seetharaman, Guna, "Nano Sensors and MEMS Technology Enabled Challenges in The Applications of Distributed Sensor Networks," Distinguished Colloquium Series of the Department of Mathematics, Wright State University, June 1, 2007.

Seetharaman, Guna, "MEMS Enabled Opportunities in Distributed Sensor Networks," IEEE Local Chapter, Invited Lecture, May 15, 2007.

Seetharaman, Guna, "A Scan-adapted Tree Representation for Adaptive Pyramid Analysis of Images," Department of Computer and Information Science and Engineering (CISE) - Gainesville, Florida. October 30, 2006.

**STARMAN, LaVERN A., Maj**

Starman, LaVern A., "Optothermally actuated microwings for an autonomous flying microrobot," invited talk, SPIE Great Lakes Photonics Symposium, Dayton OH, 12 Jun 2006.

**TEMPLE, MICHAEL A.,**

V.D. Chakravarthy, A.K. Shaw, **M.A. Temple**, A.S. Nunez, and J.P. Stephens, "Adaptive Waveforms Having Spectral Sharing Capability," *AFRL Technology Horizons*<sup>®</sup>, Vol. 7, No. 5, Oct 2006, pp. 8-11.

J. McElroy, J.F. Raquet, and **M.A. Temple**, "Opportunistic Navigation: Finding Your Way with AM Signals of Opportunity," *GPS World*, July 2007.

**WILLIAMS, PAUL D. Maj**

Maj Paul Williams, Dr. Rick Raines, Dr Bob Mills, Dr. Mike Temple, Dr. Mike Grimaila, Dr. Barry Mullins, NSA LTS invited talk "Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring," Aug 07, [CCR/ENG]

Maj Paul Williams, Invited Talk to Intel Corporation, "Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring," Aug 07 [CCR]

Maj Paul Williams, AFOSR Software and Systems and Security Program Review, Invited Talk, "CyberCraft Support," Syracuse NY, June 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Invited talk at USSTRATCOM/Omaha Chamber of Commerce, "USAF Needs for Cyber Education," June 07, [CCR/ENG/HAF]

Maj Paul Williams, Mr. Al-Nat Tuting, AFRL/IF Cyber Defense Conference, Invited Talk, "Computing Architectures for Better Security," Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Air Force Cyber Education Summit Overview," Rome, NY, May 07 [CCR]

Maj Andy Hansen, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Realistic Training in Cyberspace," Rome, NY, May 07 [CCR]

Lt Rich Dill, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Built-in 'Seeds of Destruction,'" Rome, NY, May 07 [CCR]

Maj Mike Mendenhall, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Cyber Kill Chain," Rome, NY, May 07 [CCR]

Lt Dan Karrels, Dr. Bert Peterson, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, "Architecture for Deploying Lightweight CyberCraft," Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF, CyberCraft Workshop, Invited Talk, "Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors," Colorado Springs, CO, Apr 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Presentation to SECAF, "AFIT's Contributions to Cyber Warfare Briefing," AFIT, Mar 07 [CCR/ENG]

Maj Paul Williams, Dr. Bob Mills, Dean Thomas, "USAF Scientific Advisory Board for Cyber Defense," 8AF, Barksdale, LA, Feb 07 [CCR]

Maj Williams, Paul D., Dr. Rick Raines, Dr. Bob Mills, Consultations at AU about how to best incorporate cyber warfare into AU PME, Jan 07 [CCR]

Maj Williams, Paul D., Dr. Robert Mills, Short course, "Introduction to Cyber Warfare," Lackland AFB, TX, Nov 06 [CCR] Maj Paul Williams, NSA Cyber Defense Workshop, "CuPIDS: Parallel-based Security Architectures", Dec 06 [CCR]

Maj Paul Williams, Dr. Rick Raines, "AFIT/AFRL Research Relationship Building," Rome NY, Oct 06  
[CCR]

### **PROFESSIONAL ACTIVITIES**

#### **BALDWIN, RUSTY O.,**

Faculty Advisor: Local Chapter of Eta Kappa Nu Honor Society

Reviewer: *IEEE Computer*; *International Conference on Computer Communications and Networks*; *The Journal of Systems and Software*; and *Transactions on Mobile Computing*

#### **CAIN, STEPHEN C.,**

Session Chair for the 2006 IEEE Aerospace Conference

Session Organizer for the 2007 IEEE Aerospace Conference

#### **COLLINS, PETER J.,**

Chair: AFIT/ENG Low Observables Curriculum Committee

Reviewer: *IEEE Transactions on Antennas and Propagation*, and *IEEE Transactions on Instrumentation and Measurement*

#### **FELLOWS, JAMES A., Lt Col**

Consultant: Nanotechnology SME to "Horizons 21" Air War College study group

#### **GUSTAFSON, STEVEN C.,**

Chair: ENG Curriculum Committee

Representative: EN Curriculum Development and Requirements Committee

Technical Paper Referee: IEE Electronics Letters, Optical Engineering

#### **HAVRILLA, MICHAEL J.,**

AFIT Electromagnetics Curriculum Chair

AFIT Faculty Search Committee, Member

AFIT/AFRL Planning Committee for Partnership in a \$30M World Class Scattering Facility

Acquisition of a \$250K Near Field Scanner through AFRL Materials Directorate collaborations.

Invited Session Chair, "Electromagnetic Materials," Antennas and Propagation Conference, Honolulu, Hawaii, June 2007

Reviewer for the Applied Computational Electromagnetics Society Conference, Verona, Italy, March 2007.

Invited Session Chair, "Computational Methods for NDE and Materials Characterization," Applied Computational Electromagnetics Society Conference, Verona, Italy, March 2007.

Session Chair, “Material Design, Measurement and Instrumentation”, Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Session Organizer, “Material Characterization” for the Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Technical Review Committee, Antenna Measurement Techniques Association (AMTA) Conference, Austin, TX, October 2006.

Reviewer for IEEE Transactions on Antennas and Propagation

Reviewer for IEEE Transactions on Instrumentation and Measurement

Reviewer for Journal of Electromagnetic Waves and Applications

Member on the Scitech Publishing Editorial Board

Consultant to the Air Force Research Laboratories (AFRL) Materials and Sensors Directorates

Co-organized a “Low Observables Short Course”, AFIT/AFRL, September 2006.

**HOPKINSON, KENNETH M.,**

Program Committee Member for the IEEE International Conference on Web Services (ICWS), Salt Lake City, Utah, July 9-13, 2007

Reviewer: AFOSR Proposal

**KIM, YONG C.,**

Review Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS)

Reviewer: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems; IEEE Transactions on VLSI Systems; and International Symposium on VLSI Design

**KURKOWSKI, STUART H., LtCol,**

Journal Referee: Mobile Computing and Communications Review (MC<sup>2</sup>R).

Reviewer: International Symposium on Collaborative Technologies and Systems (CTS), International Conference on Distributed Computing Systems (ICDCS), and International Conference on AD-HOC Networks and Wireless (AdHocNow).

**LAMONT, GARY B.,**

Member: Executive Committee, AFIT Tau Beta Pi Executive Committee 1992 to present

*Journal of Evolutionary Computation*, MIT Press 2001 to present

IEEE Transactions on Evolutionary Computation, 2000 to present

**MARTIN, RICHARD K.,**

Technical Paper Referee: *IEEE Transactions on Signal Processing*; *IEEE Signal Processing Letters*; *IEEE Transactions on Communications*; *IEEE Transactions on Wireless Communications*; *IEEE Communications Letters*; *IEEE Transactions on Circuits and Systems II*; *European Transactions on*

*Telecommunications; The 2007 IEEE Int. Conf. on Comm.; The Spring 2007 IEEE Vehicular Tech. Conf.; a chapter submitted to Adaptive Signal Processing for Wireless Channels (CRC Press, 2008); and Speech Dereverberation (book proposal, Springer UK)*

**MAYBECK, PETER S.,**

Member: AFIT/EN Academic Rank Promotion and Tenure Committee; AFIT/ENG Steering Committee; AFIT/ENG Faculty Search Committee; AFIT/EN Scheduling/Registration Faculty Committee; AFIT/EN Academic Support Committee; and AFIT/EN Classified Research at AFIT Committee

Chair: AFIT/ENG Academic Rank Promotion and Tenure Committee, and AFIT/ENG Guidance and Control Curriculum Committee

Representative: AFIT/EN Doctoral Council, AFIT/ENG

**MAYER, CHRISTOPHER B., Maj**

Reviewer: *2007 IEEE Swarm Intelligence Symposium*

Reviewer: *2007 Information Resource Management Association International Conference*

**MCDONALD, J. TODD, Lt Col**

Reviewer: *International Journal of Network Security*

**MILLS, ROBERT F.,**

Reviewer: *IEEE Transactions on Communications, IET Communications, Hawaii International Conference on System Sciences, International Conference on Information Warfare*

**MULLINS, BARRY E.,**

Technical Paper Referee: *IEE Electronics Letters; Information Sciences, Elsevier Publishers; Military Communications Conference (MILCOM).*

Proposal Reviewer: AFOSR (Software and Systems Program)

Member: Advisory Board for the Department of Electrical Engineering and Computer Science, University of Evansville.

Member: AFIT/EN Awards Committee

Chairman, GCE Program Assessment

Chairman, AFIT/ENG Computer Networks Sequence

GCE-09M Class Advisor (11 students)

GCE-08M Class Advisor (9 students)

Consultant: National Air and Space Intelligence Center (NASIC)

**PACHTER, MEIR**

Faculty Research Council.

DAGSI Program Coordinating Committee (Control and Signal Processing)

Associate Editor of the Journal of Optimization Theory and Applications

Session Chairman: American Control Conference, July 11-13, 2007, New York, NY.

Member of the following professional societies: IEEE, AIAA and ION; member of the IEEE committee "Engineers at Risk".

Reviewer for IEEE Transactions on Automatic Control

Reviewer for AIAA J. of Guidance, Control and Dynamics

Reviewer for International Journal of Control

AFIT liaison to AFRL/VA

Member of AFOSR Review Panel

Consultant to AFRL/VACA, AFRL/SNAT and AFRL/SNRP

Member of AFRL/VACA AFOSR *Star Team*

AFIT NRC Postdoctoral Advisor

Associate Fellow of the AIAA

Fellow of the IEEE

**PETERSON, GILBERT L.,**

Reviewer: IFIP WG 11.9 Digital Forensics; IFIP WG 11.10 Critical Infrastructure Protection ;Digital Forensic Research Workshop (DFRWS); IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS); *IEEE Transactions on Systems, Man, and Cybernetics - Part B; Information Sciences; IEEE Transactions on Signal Processing; IEEE Transactions on Evolutionary Computation, IEEE Transactions on Systems, Man, and Cybernetics, Information Sciences*

Session Chair: IFIP WG 11.0 Digital Forensics

Co-Chair: Special Topic on Information Hiding and Steganography at the IEEE Systems, Man, and Cybernetics Conference

Program Committee: Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security

**RAINES, RICHARD A.,**

Technical Paper Referee, *41<sup>st</sup> Hawaii International Conference on System Sciences* (3 papers)

Session Chair, *IEEE International Communications Conference (ICC 2007)*

Technical Paper Referee, *40<sup>th</sup> Hawaii International Conference on System Sciences* (3 papers), 2006

Technical Paper Referee, *IEEE Information Assurance Workshop, 2006*

Technical Paper Referee, *10<sup>th</sup> Colloquium for Information Systems Security Education (CISSE), 2006*

Member, Program Committee, *10<sup>th</sup> Colloquium for Information Systems Security Education (CISSE)*

Panel Member, Scholarship for Service Proposal Review, National Science Foundation, 2006

**RAQUET, JOHN F.,**

Session chair: *ION GNSS-2007, 2006 Joint Navigation Conference, 2007 ION National Technical Meeting*

Reviewer: *IEEE Transactions on Aerospace Electronics Systems; NAVIGATION, GPS Solutions*

Executive Secretary: Satellite Division of the Institute of Navigation

**SAVILLE, MICHAEL A., Maj,**

Reviewer: *IET Electronic Letters*

**SCHMIDT, JASON D., Capt,**

Session Chair for the 2007 IEEE Aerospace Conference

Session Organizer for the 2008 IEEE Aerospace Conference

Reviewer: *Journal of Directed Energy*

**SEETHARAMAN, GUNA**

Charter Member: Team CajunBot, a finalist in DARPA Grand Challenge, October 2005. Phase III – Urban Challenge, Nov 2007.

Member: Steering Committee and Program Committee, IEEE Eighth International Workshop on Computer Architecture for Machine Perception and Sensing (CAMPS); Second International Workshop on Realtime Applications of Distributed Sensor Networks IRADSN-07; and, IEEE SUTC08.

Reviewer for the following journals: The IEEE Transactions on Computer; Intl Journal of Distributed Parallel Computing; Photogrammetry and Remote Sensing, Journal of Supercomputing, and, Optics Express.

**TEMPLE, MICHAEL A.,**

Reviewer: *IEEE Journal in Selected Areas of Communications; IEEE Communications Letters; IEE Electronic Letters; and IEEE Journal in Selected Areas of Communications*

Member: AFRL Technology Review Board (TRB), Senior Member of IEEE

**TERZUOLI, ANDREW J., Jr**

Chair: Local Chapter, Joint IEEE Societies Antennas and Propagation Society (APS), Microwave Theory and Techniques (MTT), Geoscience and Remote Sensing (GRS)

Technical Paper Referee: *IEEE Transactions, IEE Proceedings*

Dayton Development Coalition (DDC) Sensors Task Force

Steering Committee: WPAFB MASINT Development Consortium

**VASQUEZ, JUAN R., LtCol,**

Co-Chair for SPIE *Signal and Data Processing of Small Targets Conference*

Co-Chair for SPIE *Acquisition, Tracking, and Pointing Conference*

**VETH, MICHAEL J., Maj,**

Session chair: *ION GNSS-2007, 2007 ION Annual Meeting, 2007 Joint Navigation Conference, 2007 ION National Technical Meeting*

Reviewer: *IEEE Transactions on Aerospace Electronics Systems; Journal of Embedded Systems*

Vice-President: Institute of Navigation, Dayton Chapter

### **5.3. DEPARTMENT OF ENGINEERING PHYSICS**

Access Phone 937-255-2012, DSN 785-2012

Fax: 937-656-6000, DSN 786-6000

Homepage: <http://www.afil.edu/en/enp/>

|              |                                                                             |            |
|--------------|-----------------------------------------------------------------------------|------------|
| <b>5.3.1</b> | <b><u>DOCTORAL DISSERTATIONS</u></b>                                        | <b>112</b> |
| <b>5.3.2</b> | <b><u>MASTER'S THESES</u></b>                                               | <b>112</b> |
| <b>5.3.3</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                      | <b>114</b> |
| <b>5.3.4</b> | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>                                   | <b>116</b> |
| <b>5.3.5</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                 | <b>116</b> |
| <b>5.3.6</b> | <b><u>REFEREED PRESENTATIONS</u></b>                                        | <b>118</b> |
| <b>5.3.7</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                     | <b>120</b> |
| <b>5.3.8</b> | <b><u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>121</b> |

### 5.3.1. DOCTORAL DISSERTATIONS

ADAMSON, PAUL E., *A General Quantum Mechanical Method to Predict Positron Spectroscopy*. AFIT/DS/ENP/07-04. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFOSR/NL.

BECK, ERIC V., *A Multireference Density Functional Approach to the Calculation of the Excited States of Uranium Ions*. AFIT/DS/ENP/07-01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: Department of Energy, Idaho Operations Office.

DISHAW, JAMES R., *Time Dependent Discrete Ordinates Neutron Transport Using Distribution Iteration in XYZ Geometry*. AFIT/DS/ENP/07-S01. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

GROSS, KEVIN C., *Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*. AFIT/DS/ENP/07-03. Faculty Advisor: Dr. Glen P. Perram. Sponsor: SAF and NASIC/DE.

TERRY, NATHAN B., *Raman Fiber Lasers and Amplifiers Based on Multimode Graded-Index Fibers and Their Application to Beam Cleanup*. AFIT/DS/ENP/07-02. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

### 5.3.2. MASTER'S THESES

#### 5.3.2.1. APPLIED PHYSICS (GAP)

BAIRD, C. JAMES., *Direct Diode Pumped Raman Amplified Based on a Multimode Graded Index Fiber*. AFIT/GAP/ENP/07-01. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/DE.

EASLEY, SHAUN M., *Anisotropy in the South Atlantic Anomaly*. AFIT/GAP/ENP/07-02. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

GAMBOA, OMAR., *Stimulated Brillouin Scattering Beam Cleanup and Beam Phasing Through Two Passive Channels*. AFIT/GAP/ENP/07-03. Faculty Advisor: Major Timothy H. Russell. Sponsor: AFRL/DE.

JONES, DAVID A., *Portable Diode Pumped Femtosecond Lasers*. AFIT/GAP/ENP/07-04. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFRL/SN.

LUNDIN, MICHAEL A., *Passive Detection of Uranyl Compounds*. AFIT/GAP/ENP/07M-05. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: DTRA.

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers*. AFIT/GAP/ENP/07-S01. Faculty Advisor: Major Timothy Russell. Sponsor: HELJTO.

SPANGLER, BRETT R., *Characterizing the Solar Wind Using DMSP Ion Drift Data*. AFIT/GAP/ENP/07-J01. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

STEENBURGH, ROBERT A., *Holes: Ionospheric Scintillation GPS and Imputation*. AFIT/GAP/ENP/07-06. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: AFRL/VS.

WERNER, JOSHUA T., *Assessment of the Impact of Various Ionospheric Models on High-Frequency Signal Raytracing*. AFIT/GAP/ENP/07-07. Faculty Advisor: Lt Col Christopher G. Smithtro. AFRL/VS.

#### **5.3.2.2. ELECTRO-OPTICS (GEO)**

ORTH, DAVID F., *An Infrared Camera Simulation for Estimating Spatial Temperature Profiles and Signal-to-Noise Ratios of an Airborne Laser-Illuminated Target*. AFIT/GEO/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: DETEC (OSD).

WISDOM, BRETT W., *Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology*. AFIT/GEO/ENNNP/07-02. Faculty Advisor: Lt Col Steven T. Fiorino. Sponsor: AFRL/DE.

#### **5.3.2.3. NUCLEAR ENGINEERING (GNE)**

CARLSON, LONNIE, *Cobalt Doping of Semiconducting Boron Carbide using Cobaltocene*. AFIT/GNE/ENP/07-01. Faculty Advisor: LTC David LaGraffe. Sponsor: DTRA/CS.

GRAY, THOMAS E., *Investigation of Gate Current in Neutron Irradiated  $Al_xGa_{1-x}N/GaN$  Heterogeneous Field Effect Transistors Using Voltage and Temperature Dependence*. AFIT/GNE/ENP/07-02. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFRL/VS and AFOSR.

HARR, LOGAN J., *Precise Calculation of Complex Radioactive Decay Chains*. AFIT/GNE/ENP/07-03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: Air Force Technical Applications Center.

JONES, CHRISTOPHER P., *High Resolution Mesoscale Weather Data Improvement to Spatial Effects for Dose-Rate Contour Plot Predictions*. AFIT/GNE/ENP/07-04. Faculty Advisor: Lt Col Steven T. Fiorino. Sponsor: DTRA/AFIT.

KLING, JOSEPH A., *The Sensitivity of RDD Contamination Predictions to Source Term Parameters*. AFIT/GNE/ENP/07-05. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DTRA/TD

MAAS, MICHAEL R., *Directional Detection of Scattered Gamma Spectra by a Portable High Purity Germanium Detector*. AFIT/GNE/ENP/07-06. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DTRA/AFIT.

#### **5.3.2.4. ELECTRICAL ENGINEERING (GE)**

HARKISS, SAMUEL I., *A Study of Bi-Directional Reflectance Distribution Functions and their Effect on Infrared Signature Models*. AFIT/GE/ENP/07-01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/SN.

#### **5.3.2.5. MATERIALS SCIENCES (GMS)**

SHELL, SCOTT A., *Optical Parametric Oscillation in Orientation-Patterned Gallium Arsenide*. AFIT/GMS/ENP/07-01. Faculty Advisor: Lt Col Thomas G. Alley. Sponsor: AFRL/SN.

### **5.3.3. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **ALLEY, THOMAS G., Lt Col,**

“Nonlinear Optical Effects in Fibers and Their Application to High Energy Lasers.” Sponsor: AFRL/DE. Funding: \$10,000.

#### **BURRGRAF, LARRY W.,**

“Role of Water in Heat Inactivation of Bacillus Anthracis Spores and Spores of Related Organisms.” Sponsor: AFNWCA. Funding: \$105,000.

#### **CUSUMANO, SALVATORE J.,**

“2007 Directed Energy Summer Intern Program: Introducing DoD DE to College Undergraduates. Sponsor: HELJTO. Funding: \$38,922. [CDE]

“Airborne Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: \$114,825. [CDE]

“Delivered Irradiance Assessment Tool (DIAT).” Sponsor: DETEC. Funding: \$103,000. [CDE]

“High Energy Laser Modeling and Simulation Program: TAWG Product Development.” Sponsor: AFRL/DE. Funding: \$400,000. [CDE]

#### **FIORINO, STEVEN T., Lt Col,**

“Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact Analysis.” Sponsor: AFRL/VA. Funding: \$18,467 [CDE]

#### **LAGRAFFE, DAVID A., LTC,**

“DTRA-AFIT Nuclear Partnership.” Sponsor: DTRA. Funding: \$90,000.

#### **MARCINIAK, MICHAEL A.,**

“Time-resolved Luminescence Spectroscopy to Determine Carrier Dynamics in Mid-infrared Semiconductor Quantum Well Optoelectronic Devices for Air Force Applications.” Sponsor: AFOSR. Funding: \$54,563.

#### **MATHEWS, KIRK A.,**

“AFTAC/TM-AFIT/ENP Support 2007.” Sponsor: AFTAC. Funding: \$50,000.

#### **NIDAY, THOMAS A., Maj,**

“Modeling and Simulation of the Dynamics and Applications of Light Filaments.” Sponsor: AFOSR. Funding: \$11,391.

#### **PERRAM, GLEN P.,**

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: \$89,746. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges.” Sponsor: AFRL/DE. Funding: \$37,500. [CDE]

“Countering the IED Threat with Infrared Signatures.” Sponsor: SAF. Funding: \$100,000. [CMSR]

“Cryo-Cooled Ti-Sapphire Laser to be used in DPAL Experiments.” Sponsor: AFRL/DE. Funding: \$106,464. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: HELJTO. Funding: \$176,450. [CDE]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/DE. Funding \$56,250. [CDE]

“Optical Diagnostics for the Production of Carbon Nanotubes from PLD.” Sponsor: AFOSR. Funding: \$43,205.

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/DE. Funding: \$103,000.

**PETROSKY, JAMES C.,**

“Analysis of Residual Memory Effects in Military Memory Systems.” Sponsor: AFRL/SN. Funding: \$32,240. [CMSR]

“Radiation Damage to Electronic Devices and Circuits: Point Defects in AlGaIn/GaN HFETS.” Sponsor: AFOSR. Funding: \$27,000.

“Radiation Effects Studies on Wide Band-Gap Devices for Use in Space Borne Platforms.” Sponsor: AFRL/VS. Funding: \$41,000.

“Support Activities to Homeland Security: Portal Scintillation.” Sponsor: DHS. Funding: \$75,000.

“Support Activities to Homeland Security: Support to NTNFC.” Sponsor: DHS. Funding: \$92,308.

**RUSSELL, TIMOTHY H., Maj,**

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: HELJTO. Funding: \$69,300. [CDE]

**SMITHRO, CHRISTOPHER G., Maj,**

“Observation and Modeling of the Mid-Latitude E- and F-Region Ionosphere During Solar X-Ray Flares.” Sponsor: AFOSR. Funding: \$5,470.

**TUTTLE, RONALD F.,**

“Establishing an Expert-Defined Protocol for Analytical Tradecraft with Career Specialization in Denial and Deception.” Sponsor: NASIC. Funding: \$75,000. [CMSR]

“JWICS Connectivity Support.” Sponsor: NASIC. Funding: \$50,000. [CMSR]

**YEO, YUNG KEE,**

“Magnetic Properties of Mn-Implanted P- Type GaN.” Sponsor: AFOSR. Funding: \$45,000.

“Magnetic Properties of TM-Implanted Dilute Magnetic Semiconductors.” Sponsor: AFOSR. Funding: \$34,480.

### 5.3.4. FUNDED EDUCATIONAL PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

#### CUSUMANO, SALVATORE J.,

“2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program”. Sponsor: Directed Energy Professional Society Educational Committee. Funding: \$30,000. [CDE]

#### PERRAM, GLEN P.,

“High Energy Laser Weapons Systems Short Course.” Sponsor: DEPS Educational Committee. Funding: \$17,500. [CDE]

#### TUTTLE, RONALD F.,

“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: \$510,000. [CMSR]

“MASINT Academic Support.” Sponsor: AFRL/SN. Funding: \$100,000. [CMSR]

### 5.3.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

#### CUSUMANO, SALVATORE J.,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, “Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants” *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

#### BURGGRAF, LARRY

Li, G. and L.W. Burggraf, “Controlled patterning of polymer films using an AFM tip as a nano-hammer”, *Nanotechnology* 18, 245302 (8pp) (2007).

#### FIORINO, STEVEN T., Lt Col,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, “Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants” *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, “Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS” *J. Dir Energy*, Vol 2, No. 4, pp. 347-362, 2007. [CDE]

#### JOHN, GEORGE

B.S. Phillips,, G. John and J.S. Zabinski, “Surface chemistry of fluorine containing ionic liquids on steel substrates at elevated temperature using Mössbauer spectroscopy”, *Tribology Letters*, Vol. 26, No. 2, May 2007

#### LAGRAFFE, DAVID A., LTC

Ignatov, A.Yu., L. Carlson, Ya.B. Losovyj, D. LaGrafte, J.I. Brand, and P.A. Dowben, "Pairwise Cobalt Doping of Boron Carbides using Cobaltocene,” *Journal of Applied Physics* 102: 83520-83523 (2007).

Carlson, L., D. LaGrafte, Snjezana Balaz, A. Ignatov, Ya. B. Losovyj, J. Choi, P.A. Dowben, and J.I. Brand, "Doping of Boron Carbides with Cobalt, using Cobaltocene," *Applied Physics A* 89: 195-201 (2007).

**HENGHELD, ROBERT L.**

Ryu, Mee-Yi, Y. K. Yeo, and R. L. Hengehold, "Implantation damage recovery and carrier activation studies of Si-implanted  $\text{Al}_{0.18}\text{Ga}_{0.82}\text{N}$  by temperature dependent Hall-effect measurements," *Physica Status Solidi (c)* 4, 2613-2616 (2007).

**MATHEWS, KIRK A.,**

Mathews, K. and J. Dishaw, "Matrix Albedo for Discrete Ordinates Infinite-Medium Boundary Condition", Joint International Topical Meeting on Mathematics & Computation and Supercomputing in Nuclear Applications (M&C + SNA 2007). Monterey, California, April 15-19, 2007, on CD-ROM, American Nuclear Society, LaGrange Park, IL, 2007.

**NIDAY, THOMAS, Maj,**

Weeks, D.E., T.A.Niday, S.H.Yang (PostDoc), "Scattering Matrix Elements for the Reaction  $\text{B}(^2\text{P}_{1/2}) + \text{H}_2(j=0) \leftrightarrow \text{B}(^2\text{P}_{3/2}) + \text{H}_2(j=0, 2, 4, 6)$ ," *J Chem Phys.* 125 (2006) 164301-164315.

**PERRAM, GLEN P.**

Dolezal, Michael W., and Glen P. Perram, "Predissociation of  $\text{Bi}_2 \text{A}(0_u^+)$ ,  $v'=21-39$ ", *Journal of Chemical Physics* 126, 084310, 1-6 (Feb 2007). [CDE]

Phelps, Charles, Carl J. Druffner, Glen P. Perram and Rand R. Biggers, "Shock Front Dynamics in the Pulsed Laser Deposition of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ", *Journal of Physics D: Applied Physics* (2007). [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, "Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS" *J. Dir Energy*, Vol 2, No. 4, pp. 347-362, 2007. [CDE]

**RUSSELL, TIMOTHY H., Maj,**

K. C. Brown, T. H. Russell, T. G. Alley, and W. B. Roh, "Passive combination of multiple beams in an optical fiber via stimulated Brillouin scattering," *Opt. Lett.*, 32, 1047-1049, 2007. [CDE]

N. B. Terry, K. T. Engel, T. G. Alley, and T. H. Russell, "Use of a Continuous Wave Raman Fiber Laser in Graded-Index Multimode Fiber for SRS beam Combination," *Opt. Expr.*, 15, 602-607, 2007. [CDE]

**WEEKS, DAVID E.,**

Weeks, D.E., T.A.Niday, S.H.Yang (PostDoc), "Scattering Matrix Elements for the Reaction  $\text{B}(^2\text{P}_{1/2}) + \text{H}_2(j=0) \leftrightarrow \text{B}(^2\text{P}_{3/2}) + \text{H}_2(j=0, 2, 4, 6)$ ," *J Chem Phys.* 125 (2006) 164301-164315.

**YEO, YUNG KEE,**

Hill, D.H., D.A. Arena, R.A. Bartynski, P. Wu, G. Saraf, Y. Lu, R. Gateau, J. Dvorak, A. Moodenbaugh, Yung Kee Yeo, "Room Temperature Ferromagnetism in Mn Ion Implanted Epitaxial ZnO Films," *Physica Status Solidi (a)*, 2006, Vol. 203, pp. 3836-3843.

Ryu, Mee-Yi, Y. K. Yeo, and R. L. Hengehold, "Implantation damage recovery and carrier activation studies of Si-implanted  $\text{Al}_{0.18}\text{Ga}_{0.82}\text{N}$  by temperature dependent Hall-effect measurements," *Physica Status Solidi (c)*, 2007, Vol. 4, pp. 2613-2616.

Wu, P., G. Saraf, Y. Lu, D.H. Hill, D.A. Arena, R.A. Bartynski, F. Cosandey, J.F. Al-Sharab, L. Wielunski, R. Gateau, J. Dvorak, A. Moodenbaugh, J. A. Raley, and Yung Kee Yeo, "Magnetic Properties of Fe-implanted ZnO nanotips grown by metal-organic chemical vapor deposition," *J. Electronic Materials*, 2007, Vol. 36, pp. 529-532.

### **5.3.6. REFEREED PRESENTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BOHN, MATTHEW J., Maj,**

Bohn, M.J. and M.A. Lundin, "Remote Sensing phase fluorimetry using a mercury vapor lamp," Proceedings of SPIE, Vol 6555, 27 Apr 2007. [CMSR]

#### **CUSUMANO, SALVATORE J.**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064  $\mu\text{m}$  and 1.557  $\mu\text{m}$ ," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.[CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

#### **FIORINO, STEVEN T., Lt Col**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064  $\mu\text{m}$  and 1.557  $\mu\text{m}$ ," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

#### **HENGHELD, ROBERT L.**

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold. "Implantation Damage Studies of Si-implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ," Presented at the International Workshop on Nitride Semiconductors held on 22-27 October 2006 in Kyoto, Japan.

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold. "Activation Studies of Si-Implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ," Presented at the Korean Physical Society 2007 Spring Meeting held on 19-20 April 2007 in Peongchang, Kangwondo, Korea.

Yuldashev, Sh.U., P.K. Khabibullaev, R.A. Nusretov, I.V. Khvan, Y.K.Yeo, R.L. Hengehold, and T.W. Kang, "Electroluminescence of n- $\text{Zn}_{1-x}\text{Mg}_x\text{O}/\text{ZnO}/\text{p-Zn}_{1-x}\text{Mg}_x\text{O}$  Heterostructures Grown on Si Substrates," the 13<sup>th</sup> International Conference on II-VI Compounds, Jeju, Korea, 10-14 September 2007.

**LAGRAFFE, DAVID A., LTC,**

LaGraffe, D., and J. Petrosky, "Developing a Professional Science Masters Degree Program in Combating Weapons of Mass Destruction." Presented at the 2007 American Society of Engineering Education Conference, 25 Jun 2007.

**PERRAM, GLEN P.**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Essenhigh, Katherine and Glen Perram, "2-D Temperature and Pressure Maps by Planar Laser Induced Fluorescence of a Low Pressure Mach 2 Supersonic Nozzle Flow: Comparisons for Different Back Pressures found in Gas Dynamic Lasers" (Paper AIAA-2007-3875) 38th AIAA Plasmadynamics and Lasers Conference, Miami, FL June 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

Gallagher, Jeffrey E., Glen P. Perram, and Skip Williams, "Ultrasensitive Absorption Measurements of Metastable Species: Pressure Broadening of the  $b^1\Sigma_g \rightarrow a^1\Delta_g$  (1,0) Band in Oxygen Using Off-Axis Integrated-Cavity Output Spectroscopy", 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007. Proceedings of the AIAA, AIAA-2007-1359 (2007). [CDE]

Fiorino, S.T., Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Daniel J. Fedyk, and Salvatore J. Cusumano "Worldwide Estimates & Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 24 km and Below at Wavelengths 0.355 to 14  $\mu\text{m}$ " SPIE Defense & Security Symposium, Atmospheric Propagation IV, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007).

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives" SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

Hawks, Michael, and Glen P. Perram, "Passive Ranging of Boost Phase Missiles" SPIE Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, Orlando, FL, April 2007. SPIE Proceedings Vol. 6569 (2007). [CDE]

**PETROSKY, JAMES C.**

Grey, T. Petrosky, J. McClory, J. "Trap Assisted Tunneling Induced Currents In Neutron Irradiated  $\text{Al}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$  HFETs" IEEE Paper 2007-500. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

McClory, J. Petrosky, J. Sattler J. Jarzen T., "Temperature Dependent Electrical Characteristics of Neutron Irradiated  $\text{Al}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$  HFETs" IEEE Paper 2007-501. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

McClory, J. Petrosky J. "An Analysis of the Effects of Low-Energy Electron Radiation On  $\text{Al}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$  HFETs." IEEE Paper 2007-502. Presented at the 2007, NSREC Poster Session, Waikiki, Hawaii, July 2007.

#### **YEO, YUNG KEE,**

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold, "Implantation Damage Studies of Si-implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ," the International Workshop on Nitride Semiconductors, Kyoto, Japan, 22-27 October 2006.

Ryu, Mee-Yi, E. A. Moore, Y. K. Yeo, and R. L. Hengehold, "Activation Studies of Si-Implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ," the Korean Physical Society 2007 Spring Meeting, Peongchang, Kangwondo, Korea, 19-20 April 2007.

Yuldashev, Sh.U., P.K. Khabibullaev, R.A. Nusretov, I.V. Khvan, Y.K.Yeo, R.L. Hengehold, and T.W. Kang, "Electroluminescence of  $n\text{-Zn}_{1-x}\text{Mg}_x\text{O}/\text{ZnO}/p\text{-Zn}_{1-x}\text{Mg}_x\text{O}$  Heterostructures Grown on Si Substrates," the 13<sup>th</sup> International Conference on II-VI Compounds, Jeju, Korea, 10-14 September 2007.

### **5.3.7. SUBSTANTIAL CONSULTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BURGGRAF, LARRY W.**

Facilitated Positron Annihilation Lifetime Spectroscopy (PALS) technology transfer to AFRL/MNMR; students assembled PALS system at Eglin AFB.

#### **FIORINO, STEVEN T., Lt Col**

Fiorino, Steven T., "Cloud Free Line of Sight Analysis" for Dr James Horkovich and Raytheon RMS Systems Engineering, Tucson, AZ, April 2007. [CDE]

Fiorino, Steven T., "Atmospheric Effects on Low-Altitude Laser Performance Analysis" for the National Academy of Science, Board on Army Science and Technology, Washington DC, May - August 2007. [CDE]

#### **MATHEWS, KIRK A.,**

Analysis and modeling of nuclear event radiation, including source, transport, detection and data analysis of radiations that include the full spectrum of electromagnetic and nuclear radiation, with Air Force Technical Applications Command, AFTAC/TH, Patrick AFB, FL.

Analysis and modeling of nuclear fuels and fuel cycle processes, with Air Force Technical Applications Command, AFTAC/TM, Patrick AFB, FL.

#### **MARCINIAK. MICHAEL A.**

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, and J.E. McCrae, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Infrared optical signature measurement research," Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Infrared counter-countermeasure research," Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2006-Sep 2007. [CDE]

Marciniak, M.A., "Time-resolved luminescence spectroscopy to determine carrier dynamics in mid-infrared semiconductor quantum well optoelectronic devices for Air Force applications," Air Force Office of Scientific Research, Oct 2006-Sep 2007.

#### **PETROSKY, JAMES C.**

Petrosky, James C., Chairman, QASPR Review Panel, NNSA, Jan-Dec 2007

Petrosky, James C., Member HEMP Review Panel, DTRA, Aug-Dec 2007.

### **5.3.8. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **OTHER PUBLICATIONS AND PRESENTATIONS**

#### **ALLEY, THOMAS G., Lt Col,**

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

#### **BOHN, MATTHEW J., Maj,**

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, 18 -20 Sep 2007, NPS, Monterey, CA [CMSR]

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, AFIT, Nov 2006. [CMSR]

#### **BURGGRAF, LARRY,**

Completed AU Air Force GS-15 Leadership Seminar, 25-29 Sept 2006.

Explored teaching and research collaborations with University of Cincinnati nuclear engineering faculty and students by video conference, joint with Dr. Petrosky.

#### **CUSUMANO, SALVATORE J.,**

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. 9CDE)

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045  $\mu\text{m}$ , 1.625  $\mu\text{m}$ , and 2.141  $\mu\text{m}$ ," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

#### **FIORINO, STEVEN T., Lt Col**

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045  $\mu\text{m}$ , 1.625  $\mu\text{m}$ , and 2.141  $\mu\text{m}$ ," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Military Sensing Symposia Active E-O System Symposium, Monterey CA, 26-28 Sep 2006. [CDE]

#### **HENGHELD, ROBERT L.**

Moore, E.A., Mee-Yi Ryu, Y. K. Yeo, and R. L. Hengehold. "Electrical Properties of Si-Implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  with High Al Mole Fraction," Presented at the March 2007 Meeting of the American Physical Society held on 5-9 March 2007 in Denver, Colorado.

**LAGRAFFE, DAVID A., LTC,**

LaGrafte, D., J. Petrosky, and P. Coomber, "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Technology," *Cbt WMD Journal* **1** 11 (2007).

LaGrafte, D., "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Technology," at *Combating Weapons of Mass Destruction: Educating Future National Security Leaders Conference*, 3 – 4 Oct 2007, National Defense University (invited).

**MARCINIAK, MICHAEL A.**

Harkiss, S.I. and M.A. Marciniak, "AFIT's large commercial aircraft infrared signature tool," 2006 Advanced Signatures Technology Symposium, Wright-Patterson AFB OH, 7-9 November 2006. [CDE]

Orth, D.F., M.A. Marciniak, S.J. Cusumano and R.L. Beauchamp, "An infrared camera simulation estimating the signal-to-noise ration and spatial temperature profile of an ABL-illuminated target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Krizo, M.J., R.J. Bartell, E.P. Magee, S.T. Fiorino, R.L. Beauchamp, M.A. Marciniak, W.F. Bailey and S.J. Cusumano, "High Fidelity Simulation of a Bi-Static Measurement of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Whiteley, M., M.A. Marciniak and S.J. Cusumano, "Algorithm for the Estimation of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, S.T. Fiorino, M. Whiteley, M.J. Krizo, R.L. Beauchamp, E.P. Magee, R.J. Bartell, K.C. Gross and D.F. Orth, "Delivered Irradiance Assessment Tool," Final Report (2007). [CDE]

**MATHEWS, KIRK A.,**

Harr, L. and Mathews, K. A., "Precise Calculation of Complex Radioactive Decay Chains", *AFTAC Sensors and Systems Meeting*, Air Force Technical Applications Command, Patrick AFB, FL, 1 May 2007.

**NIDAY, THOMAS A., Maj,**

Weeks, D.E. and T.A. Niday, "Feshbach Resonances in the Inelastic Collision  $B(^2P_{1/2}) + H_2(j) \leftrightarrow B(^2P_{3/2}) + H_2(j')$ ", APS March Meeting, Denver, CO, March 5-9, 2007.

Niday, T., Paul Muller, and Amy Robinson, "Collapse and Instability of Nanosecond UV filaments/Evaluation of Absorbing Boundary Conditions with the Channel Packet Method", Presentation at AFOSR Nonlinear Optics Workshop, Tucson, AZ, 17 October 2006.

Weeks, D.E. and T.A. Niday, "Scattering matrix elements for the inelastic collision  $B(^2P_{1/2}) + H_2(j=0) \leftrightarrow B(^2P_{3/2}) + H_2(j')$ ", Physics Department, Miami University, Oxford OH, 2007.

**PERRAM, GLEN P.**

Bartell, Richard, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Essenhugh, Katherine and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

William, Skip, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ( $a^1\Delta_g$ ) oxygen with helium", 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

Gross, Kevin C. and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

**PETROSKY, JAMES C.**

LaGrafte, D., J. Petrosky, and P. Coomber, "Combating Weapons of Mass Destruction Educational Programs at the Air Force Institute of Technology," NBC Report, Spring 2007.

**RUSSELL, TIMOTHY H., Maj,**

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

**SMITHTRO, CHRISTOPHER G., Maj,**

Smithtro, C., "Energy Deposition in the Upper Atmosphere During Extreme Solar Flares", invited colloquium, Utah State University, Logan, CO, 20 March 2007.

Smithtro, C. and S. Solomon, "An improved parameterization of thermal electron heating by photoelectrons, with application to an X17 flare", presented at the Space Weather Workshop, Boulder, CO, 26 April 2007.

Steenburgh, R. and C. Smithtro, "Ionospheric Scintillation Effects on GPS", presented at the Space Weather Workshop, Boulder, CO, 25 April 2007.

Smithtro, Christopher G., Scientific Advisor to NASA's Community Coordinated Modeling Center (CCMC) Steering Group, August 2005 – present.

Smithtro, Christopher G., Member of the Extreme-ultraviolet Variability Experiment (EVE) Science Team, 2002 – present.

**WEEKS, DAVID E.,**

Weeks, D.E. and T.A.Niday, "Feshbach Resonances in the Inelastic Collision  $B(^2P_{1/2}) + H_2(j=0) \leftrightarrow B(^2P_{3/2}) + H_2(j')$ ", APS March Meeting, Denver, CO, March 5-9, 2007.

Weeks, D.E. and T.A.Niday, "Scattering Matrix Elements for the Inelastic Collision  $B(^2P_{1/2}) + H_2(j=0) \leftrightarrow B(^2P_{3/2}) + H_2(j')$ ", Physics Department, Miami University, Oxford OH (2007).

**YEO, YUNG KEE,**

Moore, E. A., Mee-Yi Ryu, Y. K. Yeo, and R. L. Hengehold, "Electrical Properties of Si-Implanted  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  with High Al Mole Fraction," the March 2007 Meeting of the American Physical Society, Denver, Colorado, 5-9 March 2007.

**PROFESSIONAL ACTIVITIES**

**BURGGRAF, LARRY W.,**

Subject Matter Expert: Evaluated DTRA Contractor Plans and Performance, June 2007.

**HENGHOLD, ROBERT L.,**

Chair, Honors and Awards Committee, Ohio Region Section, American Physical Society

**MATHEWS, KIRK A.,**

Member: Satellite Sensor Review Panel, Air Force Technical Applications Center

Founding Member: NPP Senior Advisory Panel, Air Force Technical Applications Center

President, AFIT Doctoral Council

**MARCINIAK, MICHAEL A.,**

Department Instructor of the Quarter, Spring 2007 (AFIT Student Association)

**PETROSKY, JAMES,**

Chairman, QASPR Review Panel, NNSA, Jan-Dec 2007

Member HEMP Review Panel, DTRA, Aug-Dec 2007

**RIES, HEIDI R.,**

Member of OBOR Research Officers' Council, Technology Transfer Officers' Council.

Chair and primary author of advisory board report for Norfolk State University's NASA CREAM project Advisory Board (April 2007.)

Member, ASEE Engineering Research Council Strategic Plan Work Group.

Member, EMTEC Technical Steering Committee.

Consultant-Evaluator and member of the Accreditation Review Council for the Higher Learning Commission of the North Central Association.

Member, Board of Trustees, Engineering & Science Foundation of Dayton.

Laboratory Program Representative, National Research Council Research Associateship program.

## **5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS**

Access Phone: 937-255-3098, DSN 785-3098

Fax: 937-656-4413, DSN 986-4413

Homepage: <http://www.afil.edu/en/enc/>

|              |                                                                            |            |
|--------------|----------------------------------------------------------------------------|------------|
| <b>5.4.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                     | <b>127</b> |
| <b>5.4.2</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                | <b>127</b> |
| <b>5.4.3</b> | <b><u>REFEREED CONFERENCES</u></b>                                         | <b>128</b> |
| <b>5.4.4</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                    | <b>129</b> |
| <b>5.4.5</b> | <b><u>OTHER PRESENTATION, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>129</b> |

#### 5.4.1. FUNDED RESEARCH PROJECTS

##### **ABRAMSON, MARK A., LtCol,**

“Algorithms for Blackbox Optimizations Using Surrogate Functions.” Sponsor: AFOSR. Funding: \$8,201.

##### **BULUTOGLU, DURSUN A.,**

“Algorithmic Tools for Finding Efficient Designs and Test Suites for Test and Evaluation.” Sponsor: AFOSR. Funding: \$45,774.

##### **THORSEN, STEVEN N., Maj,**

“Analysis of the Performance of Classification and Information Fusion.” Sponsor: AFOSR. Funding: \$15,004.

#### 5.4.2. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

##### **ABRAMSON, MARK A., Lt Col**

Abramson, Mark A., Charles Audet, and J. E. Dennis, Jr., “Filter pattern search algorithms for mixed variable constrained optimization problems”, *Pacific Journal of Optimization* 3, No 3. (2007), 477-500.

##### **BULUTOGLU, DURSUN A.**

Ryan, K. J. and D. A. Bulutoglu, “E(s2)-optimal Supersaturated Designs with Good Minimax Properties”, *Journal of Statistical Planning and Inference* 137, No. 7 (2007), 2250-2262.

Bulutoglu, D. A., “Cyclically Generated Supersaturated Designs”, *Journal of Statistical Planning and Inference* 137, No. 7 (2007), 2413-2428.

Roelke, G., R. Baldwin and D. A. Bulutoglu, “Analytical Models for the Performance of Von Neumann Multiplexing”, *IEEE Transactions on Nanotechnology* 6, No. 1 (2007), 75-89.

##### **LAIR, ALAN V.**

Lair, A. V., “Large Solutions of Semilinear Elliptic Equations under the Keller-Osserman Condition”, *Journal of Mathematical Analysis and Applications* 328 (2007), 1247-1254.

##### **NOVAK, KYLE A., Maj**

Jin, S. and K. Novak, “A Semiclassical Transport Model for Two-Dimensional Thin Quantum Barriers”, *Journal of Computational Physics* 226 (2007), 1623-1644.

Jin, S. and K. Novak, “A Semiclassical Transport Model for Thin Quantum Barriers”, *Multiscale Modeling and Simulation* 5, No. 4 (2006), 1063-1086.

##### **OXLEY, MARK E.**

Thorsen, S. N., and Mark E. Oxley, “A Description of Competing Fusion Systems”, *International Journal of Information Fusion* 7 (2006), 347-360.

Clutz, T. C., K. W. Bauer, Jr. and M. E. Oxley, “Fault Detection Subsystem Optimization”, *Journal of Operations and Logistics* 1, Issue 1 (2007), IV.1-IV.11.

Luminati, J. E., T. B. Hale, M. A. Temple, M. J. Havrilla and M. E. Oxley, "Doppler Aliasing Reduction in SAR Imagery using Stepped-frequency Waveforms", *IEEE Transactions on Aerospace and Electronic Systems* 43, Issue 1 (2007), 163-175.

Roberts, M. L., M. A. Temple, R. A. Raines, R. F. Mills and M. E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework", *IEEE Journal on Selected Topics in Signal Processing* 1, No. 1 (2007), 203-213. [CCR]

MacDonald A., S. Cain, and M. E. Oxley, "Binary Weighted Averaging of an Ensemble of Coherently Collected Image Frames", *IEEE Transactions on Image Processing* 16, Issue 4 (2007), 1085-1100.

#### **THORSEN, STEVEN N., Maj**

Thorsen, S. N., and M. E. Oxley, "A Description of Competing Fusion Systems", *International Journal of Information Fusion* 7 (2006), 347-360.

#### **WHITE, EDWARD D., III**

Mangos, P. M., D. Steele-Johnson, D. LaHuis, and E. D. White, "A Multiple-Task Measurement Framework for Assessing Maximum-Typical Performance", *Human Performance* 20, No. 3 (2007), 241-258.

Monaco, J. V. and E. D. White, "Extending Cost Growth Estimation to Predict Schedule Risk", *Journal of Cost Analysis and Management*, Winter (2006), 1-13.

#### **WOOD, AIHUA W.**

Huang, J. and A. Wood, "Analysis and Numerical Solution of Transient EM Scattering from Overfilled Cavities", *Communications in Computational Physics* 1, No. 6 (2006), 1045-1055.

Li, J. and A. Wood, "Finite Element Analysis for Wave Propagation in Double Negative Metamaterials," *Journal of Scientific Computing* 82, No. 2 (2007), 263-286.

### **5.4.3. REFEREED CONFERENCES**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BAKER, WILLIAM P.**

Shepherd, M. J., R. G. Cobb, A. N. Palazotto, and W. P. Baker, "Scaling Analysis for Large Membrane Optics," *IEEE Aerospace Conference*, Big Sky, MT, Mar 2007. [CSSR]

#### **FICKUS, MATTHEW C.**

Fickus, M., G. S. Seetharaman and M. E. Oxley, "Multiscale Moment Transforms Over the Integer Lattice", *Proceedings of SPIE, Wavelets XII*, Editors: D. Van De Ville, V.K. Goyal and M. Papadakis, Vol. 6701 (2007), pp. 67011N/1-8.

Srinivasa, G., M. Fickus and J. Kovacevic, "Active Contour-based Multiresolution Transforms for the Segmentation of Fluorescence Microscope Images", *Proceedings of SPIE, Wavelets XII*, Editors: D. Van De Ville, V.K. Goyal and M. Papadakis, Vol. 6701 (2007), pp. 67010I/1-15.

#### **NOVAK, KYLE A., Maj**

S. Jin and K. Novak, "A Semiclassical Transport Model for Thin Quantum Barriers", *Workshop on Computational High Frequency Waves*, Wolfgang Pauli Institute, University of Vienna, Austria, Feb 26 - Mar 2, 2007.

**OXLEY, MARK E.**

Farooq, J., M. A. Temple, M. A. Saville and M. E. Oxley, “Application of Frequency Diverse Arrays to SAR Imaging”, *2007 International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Torino, Italy, Sep 17-21, 2007.

Fickus, M., G. S. Seetharaman and M. E. Oxley, “Multiscale moment transforms over the integer lattice”, *Proceedings of SPIE, Wavelets XII*, Editors: D. Van De Ville, V.K. Goyal and M. Papadakis, vol. 6701, pp. 67011N, 1-8, San Diego, CA , Aug 2007.

Oxley, M. E., S. N. Thorsen and C. M. Schubert, “A Boolean Algebra of Receiver Operating Characteristic Curves”, *10th International Conference on Information Fusion*, paper 1412, Quebec City, Quebec, Canada, July 9-13, 2007.

**THORSEN, STEVEN N., Maj**

Oxley, M. E., S. N. Thorsen and C. M. Schubert, “A Boolean Algebra of Receiver Operating Characteristic Curves”, *10th International Conference on Information Fusion*, paper 1412, Quebec City, Quebec, Canada, July 9-13, 2007.

**5.4.4. SUBSTANTIAL CONSULTATIONS**

**BULUTOGLU, DURSUN A.**

Bulutoglu, Dursun A., “Comparison of Factorial Designs”, Air Force Operational Test and Evaluation Center (AFOTEC), Kirtland AFB, NM, Dec 2006.

**BUSH, BRETT A., Maj**

Bush, Brett A. and Robert E. Neher, Jr., “Analysis of the Compatibility of the T-11 parachute and C-17 Aircraft”, Aeronautical Systems Center, WPAFB, OH, 2007.

**DUCKRO, DONALD E., Lt Col**

Duckro, Donald E., “Applying LEAN Principles to Minimize Transloading in the USCENTCOM AOR”, 18 AF/CR, Scott AFB, IL, Mar - Jun 2007.

Duckro, Donald E. “Global Positioning System Systems Engineering Case Study”, AF Center for Systems Engineering, WPAFB, OH, Jan – Aug 2007.

**NEHER, ROBERT E. JR., Lt Col**

Bush, Brett A. and Robert E. Neher, Jr., “Analysis of the Compatibility of the T-11 parachute and C-17 Aircraft”, Aeronautical Systems Center, WPAFB, OH, 2007.

**5.4.5. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

**ABRAMSON, MARK A., Lt Col**

Referee, *Society for Industrial and Applied Mathematics (SIAM) Journal on Optimization*

Referee, *Global Optimization*

- Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly and R. L. Pingel, "Quantitative object reconstruction tomography by mixed variable optimization", *INFORMS Midwest Regional Conference*, Northwestern University, Evanston, Illinois, August 24-25, 2007.
- Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly and R. L. Pingel, "Quantitative object reconstruction via x-ray tomography, Abel transforms, and mixed variable optimization", *Second International Conference on Continuous Optimization (ICCOPT-II)*, McMaster University, Hamilton, Ontario, Canada, August 13-16, 2007.
- Abramson, M. A., "Special Topics in Optimization", Invited lecturer, *Data Sciences Summer School*, Los Alamos National Laboratory, Los Alamos, New Mexico, July 17-19, 2007.
- Walston, J., J. W. Chrissis, and M. A. Abramson, "Search techniques for multi-objective optimization of mixed-variable systems having stochastic responses", *22nd European Conference on Operational Research*, Prague, Czech Republic, July 8-11, 2007.
- Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly and R. L. Pingel, "Quantitative object reconstruction using x-ray tomography and mixed variable optimization", Los Alamos National Laboratory X-Ray Workshop, Boulder, Colorado, May 16-18, 2007.
- Magallanez, R., M. A. Abramson, T. J. Asaki, J. E. Dennis, Jr., and M. Sottile, "Surrogate strategies for computationally expensive optimization problems with CPU time-correlated functions", Los Alamos National Laboratory, Los Alamos, New Mexico, April 5, 2007.
- Abramson, M. A., T. J. Asaki, J. E. Dennis, Jr., K. R. O'Reilly, and R. L. Pingel, "Quantitative object reconstruction using x-ray tomography and mixed variable optimization", *AMS Sectional Meeting*, Miami University, Oxford, Ohio, March 16-17, 2007.
- Abramson, M. A., "Mesh adaptive direct search algorithms for black box constrained optimization", Brigham Young University, February 22, 2007.
- Meza, J. C., A. Garcia-Lekue, M. Abramson, and J. E. Dennis, Jr., "Surface structure determination of nanostructures using a mesh adaptive optimization method", *SIAM Conference on Computational Science and Engineering*, Costa Mesa, California, February 19-23, 2007.
- Abramson, M. A., Arantazu Garcia-Lekue, Raymond Magallanez, Juan C. Meza, and J. E. Dennis, Jr., "NOMADm: A MATLAB software package for surrogate-based black box optimization", *SIAM Conference on Computational Science and Engineering*, Costa Mesa, California, February 19-23, 2007.
- Abramson, M. A., "Mesh adaptive direct search algorithms for black box constrained optimization", Exxon-Mobil Upstream Research Company, Houston, Texas, February 9, 2007.
- Abramson, M. A., "Mesh adaptive direct search algorithms for solving nasty black box constrained optimization problems", Air Force Research Laboratory, Propulsion Directorate, Wright-Patterson AFB, Ohio, November 21, 2006.
- Garcia-Lekue, A., J. C. Meza, M. A. Abramson, J. E. Dennis, Jr., and M. V. Van Hove, "Surface structure determination using simplified physics surrogates", *Second International Workshop on Surrogate Modelling and Space Mapping for Engineering Optimization*, Technical University of Denmark, Lyngby, Denmark, November 9-11, 2006.
- Abramson, M. A., K. R. O'Reilly, T. J. Asaki, R. L. Pingel, and J. E. Dennis, Jr., "Quantitative object reconstruction using x-ray tomography and mixed variable optimization", *INFORMS Annual Meeting*, Pittsburgh, Pennsylvania, November 5-8, 2006.

Abramson, M. A., "Direct search methods and second-order optimality conditions", *8th Midwest Optimization Conference*, Miami University, Oxford, Ohio, October 13-14, 2006.

**BULUTOGLU, DURSUN A.**

Referee, *Journal of Statistical Planning and Inference*

Referee, *Applied Mathematical Modelling Journal*

Bulutoglu, D. A., "Orthogonal arrays", University of Memphis, May 2007.

Bulutoglu, D. A., "Classification of Orthogonal Arrays by Integer Programming", *South Eastern Atlantic Section (SIAM) 31st Annual Meeting*, University of Memphis, May 2007.

Bulutoglu, D. A., "Classification of Orthogonal Arrays by Integer Programming", *The 44th Midwestern Graph Theory Conference*, Wright State University, May 2007.

**DUCKRO, DONALD E., Lt Col**

Judge, National Defense Science and Engineering Graduate (NDSEG) Fellowships, February, 2007

**FICKUS, MATTHEW C.**

Referee, *Applied and Computational Harmonic Analysis*

Referee, *Advances in Computational Mathematics*

Fickus, M., "Maximally equiangular frames and finite Wigner distributions", *Annual Meeting of the AMS, Special Session on "Frames and Wavelets in Harmonic Analysis, Geometry, and Applications"*, New Orleans, January 7, 2007.

Fickus, M., "Rotations over integer lattices," *31st SIAM Southeastern-Atlantic Section Conference*, Special Session on "Wavelets and Frames," Memphis, May 5, 2007.

Fickus, M., "Rotations and moments over integer lattices," *the Norbert Wiener Center's Summertime Fourier Talks*, University of Maryland, College Park, June 11, 2007.

Fickus, M., "Multiscale moment transforms over the integer lattice," *SPIE Optics & Photonics, Wavelets XII*, San Diego, August 29, 2007.

**LAIR, ALAN V.**

Reviewer, *Mathematical Reviews*

Lair, A. V., X. Wang and A. W. Wood, "Entire Positive Solutions of Elliptic Systems: Understanding the General Structure", *AMS Fall Central Sectional Meeting*, Special Session on "Boundary Value Problems", University of Cincinnati, Cincinnati, OH, October 2006

**NEHER, ROBERT E. JR., Lt Col**

Referee, *IEEE Transactions on Reliability*

**NOVAK, KYLE A., Maj**

Referee, *Communications in Mathematical Sciences*

**OXLEY, MARK E.**

Member, SPIE Conference Program Committee for *Intelligent Computing: Theory and Applications VI*, Orlando, FL, April 2007.

Reviewer, *10<sup>th</sup> International Conference on Information Fusion (FUSION 2007)*, Quebec City, Quebec, Canada

Oxley, M. E., S. N. Thorsen and C. M. Schubert, "ROC Curve Formulas for Fused Correlated Classification Systems", *Proceedings of SPIE, Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, vol. 6567, paper 29, Orlando FL, April 9-13, 2007.

Oxley, M. E., S. N. Thorsen and C. M. Schubert, "ROC Curve Formulas for Fused Correlated Classification Systems", *Proceedings of SPIE, Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, vol. 6567, paper 29, Orlando FL, April 9-13, 2007.

**THORSEN, STEVEN N., Maj**

Oxley, M. E., S. N. Thorsen and C. M. Schubert, "ROC Curve Formulas for Fused Correlated Classification Systems", *Proceedings of SPIE, Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, vol. 6567, paper 29, Orlando FL, April 9-13, 2007.

Oxley, M. E., S. N. Thorsen and C. M. Schubert, "ROC Curve Formulas for Fused Correlated Classification Systems", *Proceedings of SPIE, Signal Processing, Sensor Fusion, and Target Recognition XV*, Editor: Ivan Kadar, vol. 6567, paper 29, Orlando FL, April 9-13, 2007.

**WHITE, EDWARD D., III**

Editor, *Journal of Cost Analysis and Management*

Technical Paper Referee, *Journal of Cost Analysis and Management*

**WOOD, AIHUA W.**

Referee, *Institute for Electronic Technologies, Communications on Pure and Applied Mathematics, Boundary Value Problems*, and *IEEE Transactions on Antennas and Propagation*.

Established the Aihua Mathematics Scholarship at the Ocean University of China, Qingdao, China.

Lair, A. V., X. Wang and A. W. Wood, "Entire Positive Solutions of Elliptic Systems: Understanding the General Structure", *AMS Fall Central Sectional Meeting*, Special Session on "Boundary Value Problems", University of Cincinnati, Cincinnati, OH, October 2006

Wood, A. W., "EM Scattering from BOR using the Locally Corrected Nystrom Method", *Applied Computational Electromagnetics Society (ACES) Annual Conference*, Verona, Italy, March 2007.

Wood, A. W., "Topics in EM scattering analysis", *Applied Mathematics Seminar*, University of Joseph Fourier, Grenoble, France, June 2007.

**WRIGHT, SAMUEL A., Maj**

Wright, S. A., "The Defense of the Gungans or Using Vector Calculus to Save the Day," *Sinclair Community College Mathematics Department Fall 2006 Colloquium*, Dayton, Ohio, October 13, 2006.

## **5.5. DEPARTMENT OF OPERATIONAL SCIENCES**

Access Phone: 937-255-2549, DSN 785-2549

Fax: 937-656-4943 DSN 986-4943

Homepage: <http://www.afil.edu/en/ens/>

|              |                                                                            |            |
|--------------|----------------------------------------------------------------------------|------------|
| <b>5.5.1</b> | <b><u>DOCTORAL DISSERTATIONS</u></b>                                       | <b>134</b> |
| <b>5.5.2</b> | <b><u>MASTER'S THESES</u></b>                                              | <b>134</b> |
| <b>5.5.3</b> | <b><u>GRADUATE RESEARCH PAPERS</u></b>                                     | <b>138</b> |
| <b>5.5.4</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                     | <b>140</b> |
| <b>5.5.5</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                | <b>141</b> |
| <b>5.5.6</b> | <b><u>REFEREED PRESENTATIONS</u></b>                                       | <b>143</b> |
| <b>5.5.7</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                    | <b>148</b> |
| <b>5.5.8</b> | <b><u>BOOKS &amp; CHAPTERS IN BOOKS</u></b>                                | <b>149</b> |
| <b>5.5.9</b> | <b><u>OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>149</b> |

### 5.5.1. DOCTORAL DISSERTATIONS

CORDEIRO JR., JAMES D., *Unreliable Retrial Queues in a Random Environment*. AFIT/DS/ENS/07-03. Faculty Advisor: Dr. Jeffrey P. Kharoufeh. Sponsor: AFOSR.

SMETEK, TIMOTHY E., *Hyperspectral Imagery Target Detection Using Improved Anomaly Detection and Signature Matching Methods*. AFIT/DS/ENS/07-07. Faculty Advisor: Dr. Kenneth W. Bauer. Sponsor: SAF.

WALSTON, JENNIFER G., *Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses*. AFIT/DS/ENS/07-06. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/VASD & The National Academy of Sciences.

### 5.5.2. MASTER'S THESES

#### 5.5.2.1. LOGISTICS MANAGEMENT (GLM)

BECKLY, CHRISTOPHER M., *Sizing Mobility Readiness Spares Packages for Today's Warfighting Units*. AFIT/GLM/ENS/07-01. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AFMC/A8S.

BUCK, JESSICA L., *Class VIIIA Materiel: What Problems were Encountered Transiting OIF Air Transshipment Nodes?* AFIT/GLM/ENS/07-02. Faculty Advisor: Dr. Alan Johnson. Sponsor: DLA/MS.

BYNUM, ARNOLD R., *An Analysis of Delivering Persistent Real Time Imagery Intelligence to Combatant Commanders*. AFIT/GLM/ENV/07-M1. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

COLACICCO, JOSEPH M., *Analysis of Army Transformation and the Effects on Customer Ordering Behavior*. AFIT/GLM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

COLE III, GEORGE P., *Feasibility Study of Variance Reduction in the Logistics Composite Model*. AFIT/GLM/ENS/07-04. Faculty Advisor: Dr. Alan Johnson. Sponsor: ASC/ENMS.

CROW, SHIRLEY D., *An Evaluation of Organizational and Experience Factors Affecting the Perceived Transfer of U.S. Air Force Basic Combat Skills Training*. AFIT/GLM/ENV/07-M2. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

ELKINS, JOSEPH S., *Internal Versus External Acquisition for Small Weapons Systems*. AFIT/GLM/ENV/07-M3. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

HENNETTE, JAY C., *AFSO 21: A Comparison of Private Sector and Air Force Practices*. AFIT/GLM/ENV/07-09. Faculty Advisor: Dr. David Vaughan. Sponsor: AF/A3.

JACKSON JR., WILLIAM L., *The Viability of the Air Mobility Command Pure Pallet Program for U.S. Army Repairable Retrograde Shipments*. AFIT/GLM/ENS/07-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM J5/J4.

JOHNSON, JOHN P., *Balanced Scorecard: Aggregating Aircraft Mission Capable Rates*. AFIT/GLM/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: AF/A4ID.

MAYNARD, JILL L., *Commercial Firm Training Practices Versus Aerial Port Hazardous Cargo Frustration*. AFIT/GLM/ENS/07-08. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFMC/LSO.

MCDONALD, GAVAIN K., *Work-Home Conflict: A Study of the Impact of Role Conflict on U.S. Air Force Company Grade Officer Turnover Intentions*. AFIT/GLM/ENV/07-M4. Faculty Advisor: Maj Sharon Heilmann. Sponsor: 30 SW/CC.

MICHALSKI, SYDNEY C., *Determining Logistics Ground Support Manpower Requirements for a Reusable Military Launch Vehicle*. AFIT/GLM/ENS/07-09. Faculty Advisor: Dr. Alan Johnson. Sponsor: AFRL/VACD.

MOON, HYOUNG-ILL, *South Korea's Current Position on FMS*. FIT/GLM/ENV/07-M5. Faculty Advisor: Maj Sonia Leach. Sponsor: N/A.

MORRIS JR., GERALD W., *The Chaos of Katrina: A Nonlinear Analysis of Federal Logistics Support During Hurricane Katrina Relief Operations*. AFIT/GLM/ENS/07-10. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: N/A.

SALAVERRY JUAN A., *Predicting Argentine Jet Fuel Prices*. AFIT/GLM/ENC/07M-01. Faculty Advisor: Dr. Edward White, III. Sponsor: N/A.

TOWER, PAUL K., *An Analysis of Robust Workforce Scheduling Models for a Nurse Rostering Problem*. AFIT/GLM/ENS/07-12. Faculty Advisor: Maj Shane Knighton. Sponsor: N/A.

WALKER, S. DAVID., *The Effects of Career Broadening on Leadership Development*. AFIT/GLM/ENV/07-M6. Faculty Advisor: Lt Col Kent Halverson. Sponsor: USAF/A1DD.

WARD, CHARLES W., *Commander and User Perceptions of the Army's ITV Architecture*. AFIT/GLM/ENS/07-13. Faculty Advisor: Dr. William Cunningham, III. Sponsor: N/A.

WOLFF, JASON B., *The Perceived Effectiveness of Mentoring by Company Grade Officers in the United States Air Force*. AFIT/GLM/ENV/07-M7. Faculty Advisor: Maj Sharon Heilmann. Sponsor: N/A.

#### **5.5.2.2. OPERATIONS RESEARCH (GOR)**

BELLUCCI, JOSEPH P., *Improved Hyperspectral Image Testing Using Synthetic Imagery and Factorial Designed Experiments*. AFIT/GOR/ENS/07-01. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

CAULK, RYAN F., *Outlier Detection in Hyperspectral Imaging Using Closest Distance to Center with Ellipsoidal Multivariate Trimming*. AFIT/GOR/ENS/07-02. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

CAVALLARO, KRISTEN L., *Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization*. AFIT/GOR/ENS/07-03. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CHO, NAM-SUK, *Critical Infrastructure Rebuild Prioritization Using Simulation Optimization*. AFIT/GOR/ENS/07-04. Faculty Advisor: Dr. Sharif Melouk. Sponsor: N/A.

CRAWFORD, BRIAN P., *Approximate Analysis of an Unreliable M/M/2 Retrial Queues*. AFIT/GOR/ENS/07-05. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

FENSTERER, GERALD D., *Planning and Assessing Stability Operations: A Proposed Value-Focused Thinking Approach*. AFIT/GOR/ENS/07-06. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/IFSE.

GEFFRE, JENNIFER L., *A Layered Social and Operational Network Analysis*. AFIT/GOR/ENS/07-07. Faculty Advisor: Dr. Richard Deckro. Sponsor: NASIC/FCEB & AFRL/HECS.

GENTIL, KATHRINE J., *Developing Advanced Academic Degree Educational Profiles for Career Fields*. AFIT/GOR/ENS/07-08. Faculty Advisor: Maj Shane Knighton. Sponsor: USAF/A1XX.

HARRELL, RYAN M., *A Multivariate Magnitude Robust Control Chart for Mean Shift Detection and Change Point Estimation*. AFIT/GOR/ENS/07-09. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

HARTLAGE, ROBERT B., *An Efficient Metaheuristic for Dynamic Network Design and Message Routing*. AFIT/GOR/ENS/07-10. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

HERBRANSON, TRAVIS J., *Isolating Key Players in Clandestine Networks*. AFIT/GOR/ENS/07-11. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

JORDAN, JEREMY D., *Updating Optimal Decisions Using Game Theory and Exploring Risk Behavior Through Response Surface Methodology*. AFIT/GOR/ENS/07-13. Faculty Advisors: Dr. Marcus Perry & Dr. Sharif Melouk. Sponsor: Department of Army

KALLEMYN, BENJAMIN S., *Prioritizing Satellite Payload Selection via Optimization*. AFIT/GOR/ENS/07-14. Faculty Advisor: Dr. Jeffrey Kharoufeh. Sponsor: SAF.

KERNS, DAVID A., *Automatic Target Recognition User Interface Tool*. AFIT/GOR/ENS/07-15. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

KOO, ROBERT., *Feature Extraction Using Principal and Independent Component Analysis for Hyperspectral Imagery*. AFIT/GOR/ENS/07-16. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

MAGALLANEZ JR., RAYMOND, *Surrogate Strategies for Computationally Expensive Optimization Problems with CPU-Time Correlated Functions*. AFIT/GOR/ENC/07-01. Faculty Advisor: Lt Col Mark Abramson. Sponsor: Los Alamos National Lab.

NEWLON, THOMAS M., *Mathematical Programming Model for Fighter Training Squadron Pilot Scheduling*. AFIT/GOR/ENS/07-17. Faculty Advisor: Dr. James Moore. Sponsor: AFOSR/NM.

NORSKY, PETER C., *A Technology Investment Value Model For The Air Force Research Laboratory Focused Long Term Challenges*. AFIT/GOR/ENS/07-18. Faculty Advisor: Dr. Richard Deckro. Sponsor: N/A.

NYSETH, NATHAN E., *Classifying Failing States*. AFIT/GOR/ENS/07-19. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

PARK, SEUNG-BAE, *A Multi-Objective Decision-Making Model for Resources Allocation in Humanitarian Relief*. AFIT/GOR/ENS/07-20. Faculty Advisor: Maj Gary Kinney. Sponsor: N/A.

PATRASCU, ADRIAN C., *Optimizing Distributed Sensor Placement for Border Patrol Interdiction Using Microsoft Excel*. AFIT/GOR/ENS/07-21. Faculty Advisor: Dr. James Moore. Sponsor: N/A.

REYES, KEVIN B., *HSI: Outlier Detection Methods in Hyperspectral Imagery*. AFIT/GOR/ENS/0722-. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

ROBINSON II., PAUL D., *Patterns of War Termination: A Statistical Approach*. AFIT/GOR/ENS/07-23. Faculty Advisor: Dr. Richard Deckro. Sponsor: USSTRATCOM /GISC.

SEDER, JOSHUA S., *Examining Clandestine Social Networks for the Presence of Non-Random Structure*. AFIT/GOR/ENS/07-24. Faculty Advisor: Dr. Marcus Perry. Sponsor: AFRL/HECS & NASIC/FCEB.

TAITANO, YURI P., *Hyperspectral Imagery Target Detection Using the Iterative RX Detector*. AFIT/GOR/ENS/07-25. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

WILKEN, BRIAN A., *Change-Point Methods for Overdispersed Count Data*. AFIT/GOR/ENS/07-26. Faculty Advisor: Dr. Marcus Perry. Sponsor: N/A.

WILLIAMS, JASON P., *Robustness of Multiple Clustering Algorithms on Hyperspectral Images*. AFIT/GOR/ENS/07-27. Faculty Advisor: Dr. Kenneth Bauer. Sponsor: N/A.

#### **5.5.2.3. RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)**

HEUCK JR., WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems*. AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary Kinney. Sponsor: AFRL/AOT.

#### **5.5.2.4. ENGINEERING MANAGEMENT (GEM)**

AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects*. AFIT/GEM/ENS/07-01. Faculty Advisor: Maj Shane Knighton. Sponsor: ACC/A7-2.

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops Using Value-Focused Thinking*. AFIT/GEM/ENS/07-03. Faculty Advisor: Lt Col Jeffery Weir. Sponsor: AFCESA/CESC.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement, Partial-Depth Spall Repair Material*. AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane Knighton. Sponsor: HQ/AFCESA.

DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower*. AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane Knighton. Sponsor: AFCESA/CEXF.

#### **5.5.2.5. INFORMATION RESOURCE MANAGEMENT (GIR)**

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: AF/A4IT.

### **5.5.3. GRADUATE RESEARCH PAPERS**

#### **5.5.3.1. GRADUATE LOGISTICS MANAGEMENT (ILM)**

BENNETT JR. EARL R., CARL D. HUTCHERSON and ANTHONY L. PUENTE. *Change Management Barriers and Successful Strategies for ERP Implementation in Highly Regulated Industries: A Meta-Synthesis and Field Case Study*. AFIT/ILM/ENS/07-01. Faculty Advisor: Maj Barry Brewer. Sponsor: AF/A4IT.

CORAL, CEIR and DWAIN A. SLAUGHTER. *F-16 Aircraft Common Configuration Implementation Program (CCIP): A Modernization Program Effects Case Study*. AFIT/ILM/ENS/07-02. Faculty Advisor: Maj Barry Brewer. Sponsor: 312 AESG/DC.

GORDON, CAROL and JEFFREY R. KRUSINSKI. *Assessing Personnel Transformation Implementation to Established Change Management Standards*. AFIT/ILM/ENS/07-03. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ USAF/A1X.

HAYDEN, JEFFREY D., and SCOTT A. VAUGHAN. *United States Air Force Fuels Program: An Analysis of Automatic Data Collection Initial Investments*. AFIT/ILM/ENS/07-04. Faculty Advisor: Maj Barry Brewer. Sponsor: N/A.

HUTCHERSON, CARL D. See BENNETT JR. EARL R.

KRUSINSKI, JEFFREY R. See GORDON, CAROL.

PUENTE, ANTHONY L. See BENNETT JR. EARL R.

SLAUGHTER, DWAIN A. See CORAL, CEIR.

VAUGHAN, SCOTT A. See HAYDEN, JEFFREY D

#### **5.5.3.2. GRADUATE OPERATIONS ANALYSIS (IOA)**

OLIVER, BRADLEY R., *Optimizing the Undergraduate Pilot Training Scheduling Process*. AFIT/IOA/ENS/07-01. Faculty Advisor: Maj August Roesener. Sponsor: AETC & AFPC.

PHILLIPS, IAN D., *Tactical Relay Mirror System Integration in Base Defense*. AFIT/IOA/ENS/07-02. Faculty Advisor: Dr. John Miller. Sponsor: IDA, OSD/OFT, HQ AF/A8X & AFSFC/FPB.

WYLIE, ALEXANDER M., *Optimization of Rated Officer Staff Assignments*. AFIT/IOA/ENS/07-03. Faculty Advisor: Maj Shane Hall. Sponsor: AFPC/DPAOS.

#### **5.5.3.3. GRADUATE MOBILITY OPERATIONS (IMO)**

BUSCHUR, WILLIAM C., *An Analysis of the C-17 Two Expeditionary Airlift Squadron System*. AFIT/IMO/ENS/07-01. Faculty Advisor: Dr. James Moore. Sponsor: 437 OG/CD

DIETRICH III, GEORGE T.M., *The Future of Cargo Airdrop Rigging: A Logistical Support Analysis*. AFIT/IMO/ENS/07-02. Faculty Advisor: Dr. James Moore. Sponsor: AFEC MOS/MORA.

GITTNER, AARON W., *Intra-Theater Airlift Efficiency*. AFIT/IMO/ENS/07-03. Faculty Advisor: Dr. James Moore. Sponsor: 18 AF/CC.

HESELTINE JR., BRUCE P., *KC-135R Fuel Savings*. AFIT/IMO/ENS/07-04. Faculty Advisor: Dr. Alan Heminger Sponsor: AMC/DA3

HILEMAN, BRANDON R., *Joint Task Force-Port Opening: Matching Capabilities to Requirements*. AFIT/IMO/ENS/07E-05. Faculty Advisor: Dr. William Cunningham, III. Sponsor: USTRANSCOM/J5J4

HUISS, RANDALL S., *The Impact of Closing the C-17 Production Line on the C-17 Supplier Base*. AFIT/IMO/ENS/07-06. Faculty Advisor: Dr. Alan Johnson. Sponsor: N/A.

JULIAN, JON T., *Distinguished Visitor Airlift Defensive Systems: Applying LEAN Principles to Minimize Transloading in the USCENTCOM AOR*. AFIT/IMO/ENS/07-07. Faculty Advisor: Lt Col Donald Duckro. Sponsor: AMC A3/MA.

KNACK, JOHN T., *Determination of Fabrication Repair Capability to Enable Aircraft Maintenance Regionalization*. AFIT/IMO/ENS/07-08. Faculty Advisor: Lt Col Bradley Anderson. Sponsor: AMC/A4

LAMBERT, CHRISTOPHER L., *Transforming Mobility Airlift Forces: Analysis of Air Mobility Platform Requirements for United States Air Forces in Europe*. AFIT/IMO/ENS/07-09. Faculty Advisor: Dr. James Moore. Sponsor: USAFE/A5/8/9.

MARTIN, TIM D., *AFSO 21 and the JA/ATT System*. AFIT/IMO/ENS/07-10. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

MCCRAY, GERALD R., *Implementation of Centralized Maintenance Management for Air Mobility Command Aircraft*. AFIT/IMO/ENS/07-11. Faculty Advisor: Dr. Alan Heminger. Sponsor: AMC/DA3.

PETERSON, EDWARD H., *Cargo Command and Control: Refining Mode Selection and Cross-Docking in the Military Air Cargo Distribution System*. AFIT/IMO/ENS/07-12. Faculty Advisor: Dr. William Cunningham, III. Sponsor: HQ AMC/A4.

SCHLICHENMEYER, PATRICK L., *Air Force Manpower Reduction Analysis*. AFIT/IMO/ENS/07-13. Faculty Advisor: Dr. Michael Hicks. Sponsor: AMC/A9

SCHMIDT, LANCE E., *Rethinking MC-130H Pilot Training: Applying AFSO21 to Formal School Training*. AFIT/IMO/ENS/07-14. Faculty Advisor: Dr. Alan Heminger. Sponsor: 19 AF/CV

SINDEL, COLIN J., *Leveraging Expeditionary Combat Support Operations: A Critical Look at Standardizing the Base Opening Concept*. AFIT/IMO/ENS/07-15. Faculty Advisor: Dr. William Cunningham, III. Sponsor: 21 EMTF/CC.

WILSON, CHRISTOPHER W., *KC-X Airlift Role; What Should It Be?* AFIT/IMO/ENS/07-16. Faculty Advisor: Dr. James Moore. Sponsor: 18th AF/CC.

#### **5.5.4. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

##### **BAUER, KENNETH W. Jr.,**

“Sensor Fusion for Automatic Target Recognition.” Sponsor: AFOSR. Funding: \$51,390. [COA]

“Sensor Fusion for Automatic Target Recognition.” Sponsor: ACC. Funding: \$32,000. [COA]

##### **DECKRO, RICHARD F.,**

“AFIT/ENS and AFRL/HE Human Effectiveness Directorate MOA.” Sponsor: AFRL/HE. Funding: \$25,000. [COA]

“Commander’s Predictive Environment Program: Contributors to Instability.” Sponsor: AFRL/IF. Funding: \$15,000.

“Operations Research Methodologies in Support of NSA.” Sponsor: NSA. Funding: \$20,000.

“Social Network Analysis Tool and Behavior Modeling.” Sponsor: AFRL/HE. Funding: \$30,000.

##### **JOHNSON, ALAN W.,**

“Reusable Space Vehicle Ground Operations.” Sponsor: AFRL/VA. Funding: \$35,000. [COA]

##### **KINNEY, GARY W. Jr., Maj,**

“Effects-Based Operations Research.” Sponsor: AFRL/IF. Funding: \$15,420.

##### **KNIGHTON, SHANE A., Maj,**

“Effects-Based Operations Research.” Sponsor: AFRL/IF. Funding: \$15,000.

##### **MELOUK, SHARIF H.,**

“AFIT Modeling and Simulation Support for Air Vehicles Directorate.” Sponsor: AFRL/VA. Funding: \$30,015. [COA]

##### **MILLER, JOHN O.,**

“Air Force Standard Analysis Toolkit (AFSAT) Support.” Sponsor: SAF. Funding: \$65,000. [COA]

##### **MOORE, JAMES T.,**

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: \$50,000. [COA]

##### **PERRY, MARCUS B.,**

“Sensor Location Study and Data Analysis Plan.” Sponsor: AFRL/PR. Funding: \$5,000.

### **5.5.5. REFEREED JOURNAL PUBLICATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **BAUER, KENNETH W. Jr.,**

Bednar, E.M., Bauer, K.W., and J.O. Miller, "Use of Control Variates in a Large-Scale Aggregated Combat Model", *Journal of Defense Modeling and Simulation*, Vol 4, Number 1, Jan 2007, pages 29 - 41. [COA]

Clutz, T. C., Bauer, K. W., and M. E. Oxley, "Fault Detection Subsystem Optimization", *Journal of Operations and Logistics*, Issue 1, Volume 1, 2006. [COA]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E., "Multivariate Analysis of a Simulated Prognostics and Health Management System", *International Journal of Logistics: Research and Applications*, Vol. 10, No.1, March 2007, 1-10. [COA]

#### **COCHRAN, JEFFERY K.,**

Cochran, J.K. and Roche, K.T., "A Queuing-Based Methodology for Hospital Inpatient Bed Planning", *Journal of the Operational Research Society*, Sep 07.

Cochran, J.K. and Ramanujam, B., "Carrier-Mode Logistics Optimization of Inbound Supply Chains for Electronics Manufacturing", *International Journal of Production Economics* 103, Oct 06. pp. 826-840.

#### **COOPER, MARTHA C.,**

Henrique Correa, Lisa Ellram, Annibal Scavarda, and Martha Cooper, "An Operations Management View of the Services and Goods Product Mix," *International Journal of Operations and Production Management*, Vol. 21, Iss. 5, 2007.

Griffis, Stanley E., Thomas J. Goldsby, Martha C. Cooper, and David J. Closs (2007), "Aligning Logistics Performance Measures to the Information Needs of the Firm," *Journal of Business Logistics*, Vol. 28, No. 2, pp 35-56.

#### **DECKRO, RICHARD F.,**

Edwin J. Offutt, Jeffrey P. Kharoufeh, and Richard F. Deckro, "Distorted Risk Measures with Application to Military Capability Shortfalls," *Military Operations Research*, Vol. 11, No. 4, (2006), pp. 25 - 39.

Richard K. Bullock and Richard F. Deckro, "Foundations for System Measurement", *Measurement*, Vol. 39, No. 8, (2006), pp. 701-709.

J. Todd Hamill, Richard F. Deckro, Victor D. Wiley, and Robert S. Renfro, II, "Gains, Losses, and Thresholds of Influence in Social Networks", *International Journal of Operational Research*, Vol. 2, No. 4, (2007), pp. 357 - 379.

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", *Computers & Operations Research*, available online 13 November 2006.

#### **GRIFFIS, STANLEY E., Lt Col**

Griffis, Stanley E., Thomas J. Goldsby, Martha C. Cooper, and David J. Closs (2007), "Aligning Logistics Performance Measures to the Information Needs of the Firm," *Journal of Business Logistics*, Vol. 28, No. 2, pp 35-56.

Griffis, Stanley E., Thomas J. Goldsby (2007), "Transportation Management Systems: An Exploration of Progress and Future Prospects" *Journal of Transportation Management*, Vol. 18, No.1, pp 18-32.

**JOHNSON, ALAN W.,**

Moore, T., Johnson, A., Reh, M., and Hicks, M., 2007, "Quality Assurance Staffing Impacts in Military Aircraft Maintenance Units", *Journal of Quality in Maintenance Engineering* 13(1): 33-48. [COA]

Ford, C., J. Howe, A. Johnson, and J. Bell, 2006, "Automatic Test Systems: Unique versus Common Management", *Defense Acquisition Review Journal* Dec 06-Mar 07: 170-185. [COA]

**KHAROUFEH, JEFFREY P.,**

Offutt, E., Kharoufeh, J.P., and R.F. Deckro. Distorted risk measures with application to military capability shortfalls. *Military Operations Research*, 11 (4), 25-39, December 2006.

Sherman, N.P. and J.P. Kharoufeh. An M/M/1 retrial queue with unreliable server. *Operations Research Letters*, 34 (6), 697-705, November 2006.

**MATTIODA, DANIEL D., Maj**

Mattioda, Daniel D., Chen, Haozhe, and Patricia J. Daugherty (2007), "Firm-Wide Integration and Firm Performance," *International Journal of Logistics Management*, Vol. 18, No. 1, pp. 5-21.

Mattioda, Daniel D., Sabath, Robert, Patricia J. Daugherty, and Haozhe Chen (2007) "Who—and What—is Profitable?," *Supply Chain Management Review*, Vol. 11, No. 5, pp. 44-50.

**MILLER, J. O.,**

Bednar, Earl M., Bauer, K.W. Jr, and Miller, J.O. "Use of Control Variates in a Large-Scale Aggregated Combat Model," *The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology*, Vol 4 No. 1, pp. 29-41, January 2007. [COA]

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. "Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons," *Journal of Directed Energy*, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E. "Multivariate Analysis of a Simulated Prognostics and Health Management System," *International Journal of Logistics: Research and Applications*, Volume 10, No. 1, pp. 1-10, Mar 2007. [COA]

**OGDEN, JEFFREY A.,**

Ogden, J. A., Rossetti, C. L., and Hendrick, T. E. (2007) "An Exploratory Cross-Country Comparison of Strategic Purchasing" *Journal of Purchasing and Supply Management*, Vol. 13, No. 1, 2-16.

Petersen, K. J., Ogden, J. A., and Carter, P. L. (2007) "B2B E-marketplaces: An Empirical Investigation of Functionality" *International Journal of Physical Distribution and Logistics Management*, Vol. 37, No. 1, 4-18.

Ogden, J. A. (2006) "Critical Success Factors of Supply Base Reduction Efforts," *Journal of Supply Chain Management*, Vol. 42, No. 4, 30-40.

**PERRY, MARCUS B.,**

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "Estimation of the Change Point of the Process Fraction Nonconforming with a Monotonic Change Disturbance in SPC". *Quality and Reliability Engineering International* 23 : (3), pp. 327-339.

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "Change Point Estimation for Monotonically Changing Poisson Rates in SPC". *International Journal of Production Research* 45 (8), pp. 1791-1813.

Perry, M. B., Pignatiello, J. J., Jr. and Simpson, J. R. (2007), "A Magnitude-Robust Control Chart for Monitoring and Estimating Step Changes in a Poisson Rate Parameter," *International Journal of Reliability, Quality and Safety Engineering*, 14:(1), pp. 1-20.

**WEIR, JEFFERY D., Lt Col**

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", forthcoming in *Computers & Operations Research* (Available online 13 November 2006). [COA]

Brazier, C., Thal, A.E. and Weir, J.D., "Evaluating the Effectiveness of Utility Privatization Efforts", *Journal of Facility Management* 5:2, pp 86 - 102 (2007). [COA]

**5.5.6. REFEREED PRESENTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

**BAUER, KENNETH W. Jr.,**

Smetek, T.E., K.W. Bauer, "Finding Hyperspectral Anomalies Using Multivariate Outlier Detection," *Proceedings of the 2007 IEEE Aerospace Conference*, March 2007. [COA]

Friend, M. A. and K.W. Bauer, "ROC Trajectory Measures for Classifier Accuracy and Robustness," *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006)*, Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, , St. Louis, MO, 5-8 November 2006. [COA]

**BREWER, BARRY L., Maj**

Brewer, B. "Examining the Drivers of Procurement Outsourcing." 18th Annual North American Research & Teaching Symposium on Purchasing and Supply Chain Management, March 29-31, 2007, Tempe, AZ.

Brewer, B. and Carter, P. "Taxonomy of Procurement Outsourcing." 37<sup>th</sup> Annual Meeting of the Decision Sciences Institute, November 21-23, 2006, San Antonio, TX.

**CHRISSIS, JAMES W.,**

Jennifer Walston, James W. Chrissis, and Mark A. Abramson, "Search Techniques for Multi-Objective Optimization of Mixed-Variable Systems Having Stochastic Responses", 22nd European Conference on Operational Research, Prague, Czech Republic, July 8-11, 2007.

Maj J. Todd Hamill, Richard F. Deckro, James W. Chrissis and Robert F. Mills, "An Interpersonal Influence Representation in Social Network Flow Modeling", *INFORMS Pittsburgh*, November 2006.

**COCHRAN, JEFFERY K.,**

Burdick, T.L., Cochran, J.K., Kiesel, S., and Modena, C., "Banner Health / Arizona State University Partnership in Redesigning Emergency Department Care Delivery Focusing on Patient Safety", 19<sup>th</sup> Annual IIE Society for Health Systems Conference, 8 pages on CD-ROM, New Orleans, LA (Feb 07).

Broyles, J.R. and Cochran, J.K., “Estimating Business Loss to a Hospital Emergency Department from Patient Reneging by Queuing-Based Regression”, IIE Industrial Engineering Research Conference, 6 pages on CD-ROM, Memphis, TN (May 07).

Roche, K.T. and Cochran, J.K., “Improving Patient Safety by Maximizing Fast-Track Benefits in the ED – A Queuing Network Approach”, IIE Industrial Engineering Research Conference, 6 pages on CD-ROM, Memphis, TN (May 07).

**COOPER. MARTHA C.,**

Francois Charvet, Martha Cooper, and John Gardner. “Empirical Study of the Relationship Between Production and Operations Management and Supply Chain Management Literatures”, 2007 POMS Conference, May 4 -7, 2007, Dallas, Texas.

Henrique Luiz Corrêa, Lisa M. Ellram, Annibal José Scavarda, and Martha C. Cooper. "An Operations Management View of the Services and Goods Offering Mix", 2007 POMS Conference, May 4 -7, 2007, Dallas, Texas, CD-ROM.

**CUNNINGHAM, WILLIAM A. III,**

William Jackson, William Cunningham, and Alan Johnson, “Pure Pallet Program Viability for Military Retrograde Shipments,” 18<sup>th</sup> Annual Production and Operations Management Society Annual Meeting, Dallas, TX, June 2007.

Jackson, W., Cunningham, W., and Johnson, A., “Pure Pallet Program Viability for Military Retrograde Shipments”, POM 18<sup>th</sup> Annual Conference, Dallas, May 4-7 2007.

**DECKRO, RICHARD F.,**

James A. Leinart, Richard F. Deckro, Marcus B. Perry, “Unrevealed Elements of Network Systems”, INFORMS Midwest Regional Conference, Northwestern University, Evanston, IL, 24-25 August 2007.

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, “Public Resolve: The Casualty of the “Long War”, Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007.

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, “Risk Analysis: Critical Components in Terrorist Attacks”, Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007.

Capt. Gerald Fensterer, Maj Gary Kinney, and Dr. Richard F. Deckro, “Planning and Assessing Stability Operations: A Value Focused Thinking Approach”, Presented in WG 3, WG 24 and WG28 75th Military Operations Research Society Symposium, June 2007.

Richard F. Deckro, Marcus B. Perry, Capt Jennifer L. Geffre, Capt Travis J. Herbranson and Capt Joshua S. Seder, “Social Network Analysis Research at AFIT”, Adversary Behavioral Modeling: Available Tools and Applications for the Warfighter Conference, Air War College, Maxwell AFB, March 2007.

Maj J. Todd Hamill, Richard F. Deckro, James W. Chrissis and Robert F. Mills, “An Interpersonal Influence Representation in Social Network Flow Modeling”, INFORMS Pittsburgh, November 2006.

Maj Michael Artelli & Richard F. Deckro, “Modeling the Lanchester Laws”, Air Force Operations Research Symposium, Kirkland AFB, October 2006.

**DONOVAN, PAMELA, Lt Col**

Lt Col Pamela Donovan and Dr. Philip Evers, "A Joint Replenishment Inventory Model with Transportation Costs: A Study in the Retail Grocery Industry", Production and Operations Management Society Annual Conference, Dallas Texas, 4 May 2007.

**HALL, SHANE N., Maj**

Hall, S.N., Roesener, A.G., 2007, "A Survey of Heuristic Methods," 75th Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 11-14, 2007.

Jacobson, S.H., Nikolaev, A., Hall, S.N., 2007, "An Analysis of Finding Near-Optimal Solutions Using Local Search Algorithms," INFORMS Computing Society Meeting, Coral Gables, FL, January 3-5, 2007.

Hall, S.N., Jacobson, S.H., Sewell, E.C., 2006, "Optimizing Pediatric Vaccine Formularies," INFORMS Annual Meeting, Pittsburgh, PA, November 5-8, 2006.

**JOHNSON, ALAN W.,**

Cole, G. and Johnson, A.W., "Logistics Composite Model Variance Reduction". INFORMS National Meeting, Pittsburgh, November 4-8 2006. [COA]

Jackson, W., Cunningham, W., and Johnson, A., "Pure Pallet Program Viability for Military Retrograde Shipments", POM 18<sup>th</sup> Annual Conference, Dallas, May 4-7 2007. [COA]

Michalski, S. and Johnson, A.W., "Ground Support Staffing for Reusable Launch Vehicle Generation." 42<sup>nd</sup> Annual SOLE International Logistics Conference and Exhibition, 19-23 August 2007, Pittsburgh. [COA]

Michalski, S. and Johnson, A.W., "Logistics Personnel Requirements for Ground Support of a Reusable Military Launch Vehicle", Proceedings of the American Institute of Aeronautics and Astronautics Space 2007 Conference, Long Beach CA, AIAA-2007-6273. [COA]

Michalski, S. and Johnson, A.W., "Manpower Requirements for Reusable Military Launch Vehicle Regeneration", 75<sup>th</sup> MORS Symposium, Annapolis, 12-14 June 2007. [COA]

**KHAROUFEH, JEFFREY P.,**

Cordeiro, J.D. and J.P. Kharoufeh (2007). Analysis of an unreliable retrial queue in a random environment. Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, May 19-23, 2007.

Crawford, B. and J.P. Kharoufeh (2007). Approximate analysis of an unreliable multiserver retrial queue. Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, May 19-23, 2007.

Kharoufeh, J.P. (2007), Analysis and optimal control of unreliable retrial queueing systems. Air Force Office of Scientific Research, Optimization and Discrete Mathematics Program Review, Arlington, VA, May 7-9, 2007.

Kharoufeh, J.P. (2006), Maximizing the availability of a periodically inspected system with hidden failures. Invited Seminar. Cincinnati-Dayton Chapter of INFORMS Business Meeting, Wright State University, November 16, 2006.

Kharoufeh, J.P. (2006), Degradation-based prognostics via phase-type approximations. Invited session, INFORMS Annual Meeting, Pittsburgh, PA, November 5-8, 2006.

Flory, J.A. and J.P. Kharoufeh (2006), Satellite payloads for inclusion on a satellite bus. Air Force Operations Research Symposium, Albuquerque, NM, October 17-20, 2006.

**KINNEY, GARY W. Jr., Maj**

Capt. Gerald Fensterer, Maj Gary Kinney, and Dr. Richard F. Deckro, "Planning and Assessing Stability Operations: A Value Focused Thinking Approach", Presented in WG 3, WG 24 and WG28 75th Military Operations Research Society Symposium, June 2007.

**KNIGHTON, SHANE A., Maj**

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", INFORMS International, Puerto Rico, July 2007. [COA]

Knighton, Shane. "Network Flow Model for Optimizong Fighter Squadron Selection", Royal Military Academy, Kingston, Ontario, June 07. [COA]

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, "Risk Analysis: Critical Components in Terrorist Attacks", Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007. [COA]

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", Decision Analysis Affinity Group, Stanford, CA, March 07. [COA]

**MATTIODA, DANIEL D., Maj**

Barman, Samir, Daniel D. Mattioda, and Warren F. Fisher (2006), "Effects of Controlled Release of Jobs in a Hybrid of Job and Flow Shops," Decision Science Institute Annual Conference, San Antonio, TX .

**MELOUK, SHARIF H.,**

Melouk, S. and P. Damodaran. (2007), "Analysis of the Passenger Security Screening Process using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S. and K. Cavallaro (2007), "Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S., M. Perry, and M. Carras. (2006). BDA Enhancement Methodology using Situational Parameter Adjustments. INFORMS Conference, Pittsburgh, PA. November 5-8. [COA]

**MILLER, J. O.,**

Honabarger, Jason B. and Miller, J.O. "Modeling and Measuring Network Centric Warfare (NCW) With the System Effectiveness Analysis Simulation (SEAS)," 11<sup>th</sup> International Command and Control Research Technology Symposium, Cambridge, UK, 26-28 Sep 2006. [COA]

**MOORE, JAMES T.,**

Burks, Robert E. and James T. Moore, "Solving the Theater Distribution Problem with Tabu Search, Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Arlington, VA 7-9 May 2007. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the LPDLTW with a Theater Distribution Application", Institute for Operations Research and the Management Sciences (INFORMS) Conference, Pittsburgh, PA, 5-8 Nov 2006. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the Theater Distribution Problem", Air Force Operations Research Society Symposium, Albuquerque, NM, 18-20 Oct 2006. [COA]

**OGDEN, JEFFREY A.,**

Ogden, J. A., Lowry, P. B., Petersen, K. J. and Carter, P. L. (2007) "E-marketplace Survival: An Empirical Investigation from a Supply Management Viewpoint" published as a full paper and presented at the 18<sup>th</sup> Annual North American Research/Teaching Symposium on Purchasing and Supply Chain Management, Tempe, Arizona, March 2007.

**PERRY, MARCUS B.,**

James A. Leinart, Richard F. Deckro, Marcus B. Perry, "Unrevealed Elements of Network Systems", INFORMS Midwest Regional Conference, Northwestern University, Evanston, IL, 24-25 August 2007.

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007.

Perry, M. B. (2007), "Identifying the Time of Step Change in the Mean of a MA(1) Process," Proceedings of the 2007 Industrial Engineering Research Conference, Nashville, TN, 19-23 May.

Richard F. Deckro, Marcus B. Perry, Capt Jennifer L. Geffre, Capt Travis J. Herbranson and Capt Joshua S. Seder, "Social Network Analysis Research at AFIT", Adversary Behavioral Modeling: Available Tools and Applications for the Warfighter Conference, Air War College, Maxwell AFB, March 2007.

Perry, M. B. (2007), "Identifying the Time of Step Change in the Mean of MA(q) Processes," Invited Talk. Industrial Engineering Research Conference, 2007.

Perry, M. B. (2006). "A Change Point Model for the Exponential Family". INFORMS Annual Meeting, Pittsburgh, PA, November 5-8.

Melouk, S. H. and Perry, M. B. (2006). "BDA Enhancement Methodology Using Situational Parameter Adjustments". INFORMS Annual Meeting, Pittsburgh, PA, November 5-8.

**ROESENER, AUGUST G., Maj**

Hall, S. N., and Roesener, A.G., "A Survey of Heuristics," 75<sup>th</sup> Military Operations Research Society Symposium, United States Naval Academy, Annapolis, MD, June 11-14, 2007.

**ZALEWSKI, DANIEL J., Col,**

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007. [COA]

### **5.5.7. SUBSTANTIAL CONSULTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

#### **ANDERSON, BRADLEY E., Lt Col**

Advisor to Army Joint Logistics Education & Development Forum, May 2007. [COA]

#### **CUNNINGHAM, WILLIAM A. III,**

Conducted study for AFLMA on transportation data needs for new Air Force ERP system (ECSS).

#### **DECKRO, RICHARD F.,**

Information Operations Joint Munitions Effectiveness Manual (PSYOP) Functional Area Meeting, John Hopkins University Applied Physics Lab, 26-27 September, 2007.

Behavioral Influences Analysis Center (BIAC) Conference, Montgomery, AL, 18 -19 September, 2007.

Attended Human Factors Integrated Process Team Quarterly Meeting, BAE Systems Herndon VA, 2-3 September 2007.

Dick Deckro, "Operational Military Operations Research", AFIT- Canadian Forces Bi-Lateral Operations Research Meeting, 19-22 June, 2007, The Royal Military College of Canada/Land Capability Development, Kingston Ont.

Invited participant in Psychological Operations (PSYOP) Community of Knowledge and Practice (CKAP) Conference on Joint PSYOP Education and Training requirements and opportunities in support of the development of CJCS' Joint PSYOP Transformation Plan at Naval Information Operations Center Norfolk, VA, 3- 5 April, 2007.

Invited participant in first Information Operations Threat Analysis Working Group (IO TAWG), hosted by the 57 ATG and the 57 Information Aggressor Squadron (57 IAS) at Nellis AFB, NV, 27-29 March, 2007.

Deckro, R. F., Perry, M. B., Herbranson, T. and Geffre, J. (2007). "Social Network Analysis Research at AFIT". Adversarial Behavioral Modeling Conference, U.S. Air Force, Maxwell AFB, AL, March 08-09.

Participant MORS Workshop, Warrior Analysts: How Can We Be Better Combat Multipliers?, 30 January - 1 February 2007, Booz Allen Hamilton, McLean, Virginia.

Dick Deckro, "Combining Operations Research and Behavioral Analysis", Behavioral Influences Analysis Mini-Elective, Air War College, October 2006.

Attended Human Factors Integrated Process Team Quarterly Meeting, U. S. Central Command, MacDill AFB, 2-3 August 2006. Member, HF-IPT Technology Committee.

#### **JOHNSON, ALAN W.,**

1FW, 1AMXS, Langley AFB VA, 30 May – 1 June 2007, F-22 Sortie generation modeling. [COA]

Johnson, A.W., Royal Military College, Kingston Ontario, 19 June 2007, "AFIT Logistics-Focused Analysis." [COA]

#### **KNIGHTON, SHANE A., Maj**

"Course of Action Selection and Assessment", AFRL Rome Laboratory, March & September 2007. [COA]

**MILLER, J. O.,**

AF/A9: ongoing discussions on modeling and simulation and analyst career development. [COA]

AFRL/VA: ongoing discussions on Combat Modeling with SEAS and FLAMES. [COA]

C17 SPO: ongoing discussions concerning Strategic Brigade Airdrop. [COA]

Miller, J.O. "Selected COA Research," Canadian Royal Military College and Canadian Forces Land OR Group Visit, Kingston, ON Canada, 19 Jun 2007. [COA]

**PERRY, MARCUS B.,**

Perry, M. B. (2007), "A Change Point Model for the Location Parameter of Exponential Family Densities". Research Seminar, Department of Industrial and Systems Engineering, Florida International University, Miami, FL.

**5.5.8. BOOKS AND CHAPTERS IN BOOKS**

Note: Research Center affiliations are listed in [ ] if applicable.

**JOHNSON, ALAN W.,**

Johnson, A., Brigantic, R., and Mahan, J., 2007, "Strategic Mobility and Deployment", Methods for Conducting Military Operational Analysis: Best Practices in Use Throughout the Department of Defense, L. Rainey and A. Loerch, Editors, Military Operations Research Society, Publishers, pp 281-315. [COA]

**5.5.9. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

Note: This section includes Refereed Presentations based on Abstract Review and Invited Presentations.

Note: Research Center affiliations are listed in [ ] if applicable.

**ANDERSON, BRADLEY E., Lt Col [COA]**

Reviewer: Decision Sciences Institute (DSI ) Journal & Journal of Applied Mathematics and Decision Sciences (JAMDS).

**BAUER, KENNETH W. Jr., [COA]**

QWEST member: Dr. Steve Rogers, Chief Scientist for Sensor Fusion and ATR at AFRL/SN has formed a QWEST advisory board to develop a new way to approach pattern recognition problems. The members are Dr. Rogers, Dr Matt Kabrisky (AFIT EE emeritus professor), Dr. Oxley (Mathematic Dept.), and Dr. Bauer (Operational Sciences Dept.)

**CHRISSIS, JAMES W.,**

Reviewer: Papers for the MDO sessions at the January 2007 AIAA Aerospace Sciences Meeting in Reno, NV; April 2007 AIAA SDM Conference/MDO Specialist Conference in Hawaii; and Military Operations Research.

Session Chair: January 2007 AIAA Aerospace Sciences Meeting in Reno, NV.

Member: MDO/TC Education Subcommittee

**COCHRAN, JEFFERY K.,**

Editorial Board, Computers in Industry, Journal of Design and Manufacturing Automation, International Journal of Simulation and Process Modeling, International Journal of Industrial and Systems Engineering.

Program Committee, IASTED International Conference on Modeling and Simulation.

Director, Health and Human Systems Laboratory, Ira A. Fulton School of Engineering.

Faculty Advisor and Co-Founder, ASU INFORMS Student Chapter and Omega Rho, Operations Research Honor Society Student Chapter, ASU.

Faculty Associate, Arizona Center of Integrative Modeling and Simulation.

**COOPER, MARTHA C.,**

"Logistics Ph.D. Hiring Survey," Martha C. Cooper and John Santosa, distributed at the Logistics Educators Conference, and at the doctoral consortium; 2006 survey distributed at San Antonio meeting and provided on Ohio State Fisher College web site: <http://www.fisher.osu.edu/logistics/survey/academic/survey.pdf>

"The Intellectual Structure of Supply Chain Management: A Bibliometric Approach," Martha Cooper, Francois Charvet, and John Gardner, Helsinki School of Economics, December 19, 2006, presentation.

"SCM As An Innovation In Business Management: Yes or No and Where Is It Going?" Martha C. Cooper, Francois F. Charvet, and John T. Gardner, SIMPOI-POMS Brazil, Rio de Janeiro, August 8-10, 2007, one of three keynote speakers. Presentation posted on SIMPOI web site.

"Future Trends Affecting SCM," part of educator panel at Procter and Gamble Supply Chain Leadership Summit, March 6, 2007, presentation.

"Future Trends of SCM and Logistics Research," Martha Cooper, Anthony Roath, Judith Whipple, 3<sup>rd</sup> Annual Supply Chain Doctoral Symposium, University of Maryland, College Park, MD, March 10, 2007.

"Women in Logistics 2006," Martha Cooper, Linda Coley, and Susan Dexter, Council of Supply Chain Management Professionals Annual Meeting, San Antonio, October 15-18, 2006, presentation.

"2006 Career Patterns of Women in Logistics," Martha C. Cooper, John Santosa, and Angela Lewis, Council of Supply Chain Management Professionals Annual Conference. Results posted on CSCMP web site: <http://www.cscmp.org/Downloads/Career/06CareerPatternsWomen.pdf>

Elected Vice President Education, SOLE – The International Society of Logistics, Dallas, August 2006, two-year term.

Associate Editor, Journal of Supply Chain Management.

Editorial Review Board for the Journal of Business Logistics, Journal of Operations Management, Journal of Physical Distribution and Logistics Management, Supply Chain Forum: An International Journal, and Journal of Transportation Management.

Editorial Advisory Board for the Supply Chain Management Review and Journal of Marketing Channels.

Paper Reviewer for: The Journal of Business Logistics, Supply Chain Forum: An International Journal, European Journal of Operations Research, International Journal of Operations and Production Management, International Journal of Physical Distribution and Logistics Management, Journal of Operations Management, CSCMP Educators' Conference, and American Marketing Association Educators' winter conference.

Reviewer for SCRMC 2006 Doctoral Dissertation Award.

Breakout session leader, College of Supply Chain Management, Austin TX, May 2007.

Co-Chair Ohio State University Campus Campaign, FAES, 2005-2007.

Outside dissertation reviewer and opponent for Helsinki School of Economics, Finland (defense December 2006).

Professional Association Membership: American Marketing Association, Association for Consumer Research, The Classification Society of North America, The Institute of Management Sciences (now INFORMS), The Council of Supply Chain Management Professionals (formerly the Council of Logistics Management), SOLE – The International Society of Logistics [Engineers] (Senior Member), and Warehouse Education and Research Council.

**CUNNINGHAM, WILLIAM A. III,**

Editorial Review Board for Journal of Transportation Management and Air Force Journal of Logistics.

Reviewer for Transportation, 6<sup>th</sup> ed. By Coyle, Bardi and Novack, Southwestern Publishing.

Examiner for American Society of Transportation and Logistics professional certification (CTL) exam, responsible for developing exam and study materials for the Transportation and Economics module.

**DECKRO, RICHARD F.,**

Judge, Decision Analysis Track, Cadet Capstone Conference, United States Military Academy, West Point, 3 May 2007.

Participant MORS Workshop, Warrior Analysts: How Can We Be Better Combat Multipliers?, 30 January - 1 February 2007, Booz Allen Hamilton, McLean, Virginia.

Editor, Military Operations Research.

Immediate Past President, Military Applications Society, INFORMS (from November 2006).

Area Editor, Service Systems, Computers & Industrial Engineering.

Member: MORS Publication Committee, Peacekeeping and Stability Operations Institute Academic Consortium, Advisory Group on Applications, GMU/CMU MURI “Computational Modeling of Cultural Dimensions in Adversary Modeling”, and PSYOP CKAP & IO CKAP.

Reviewer: Computers & Industrial Engineering, Computers & Operations Research, Journal of Business and Management, Journal of Defense Modeling and Simulation, OMEGA, and John Wiley & Sons.

**DONOVAN, PAMELA, Lt Col,**

Reviewer: Council of Supply Chain Management Professionals Student Papers and The Transportation Journal.

**HALL, SHANE N., Maj**

Reviewer: Military Operations Research Journal.

**JOHNSON, ALAN W., [COA]**

Session Chair, Air Force Supply Chain Analysis, INFORMS National Meeting, November 5-8, 2006, Pittsburgh.

Sessions Chair, Air Force Supply Chain Analysis, Defense Logistics Analysis, INFORMS National Meeting, November 4-7, 2007, Seattle.

Vice Chair, Space Logistics Technical Committee, American Institute of Aeronautics and Astronautics.

Council Member, Military Applications Society, INFORMS.

Member: Military Operations Research Society (MORS)/ Production and Operations Management Society (POMS).

Manuscript Reviewer: European Journal of Operational Research and Military Operations Research Journal.

**KHAROUFEH, JEFFREY P.,**

Associate Editor: Encyclopedia of Operations Research, by Wiley & Sons, IEEE Transactions on Reliability, and Operations Research Letters.

Elected to the Board of Directors, Operations Research Division, Institute of Industrial Engineers (IIE).

Reviewer for: Operations Research, IIE Transactions, Naval Research Logistics, Military Operations Research, and Industrial Engineering Research Conference 2007.

Session Chair: "Theory and Applications of Stochastic Processes." Operations Research Track, Industrial Engineering Research Conference, May 19-23, 2007, Nashville, TN.

Kharoufeh, J.P. (2007), A stochastic service system with disruptions and retrials. Invited Seminar. Department of Decision Sciences, Drexel University, January 26, 2007.

Kharoufeh, J.P. (2007), A mathematical framework for condition-based reliability. Invited Seminar. Department of Mechanical and Industrial Engineering, Northeastern University, January 12, 2007.

Kharoufeh, J.P. (2006), Maximizing the availability of a periodically inspected system with hidden failures. Invited Seminar. Department of Mechanical and Industrial Engineering, University of Iowa, October 19, 2006.

**KNIGHTON, SHANE A., Maj, [COA]**

Member, Institute for Industrial Engineers and INFORMS.

**MELOUK, SHARIF H., [COA]**

Dayton Area Graduate Studies Institute (DAGSI) Representative.

Special Session Organizer & co-Chair, Flexible Automation and Intelligent Manufacturing Conference, Philadelphia, PA. June 18-20, 2007.

Session Organizer & Chair, Industrial Engineering Research Conference, Nashville, TN. May 19-23, 2007.

Treasurer, INFORMS Cincinnati/Dayton Chapter, 2006-07.

Membership Committee Member, INFORMS Simulation Society, 2006-07.

Referee for: European Journal of Operational Research, International Journal of Production Economics, Proceedings of 2007, and Industrial Engineering Research Conference.

**MILLER, J. O., [COA]**

INFORMS Simulation Society Council Representative (elected position).

Judge for MORS Rist Prize 2006 & 2007.

Associate Editor for International Journal of Operations Research.

Journal Referee: Military Operations Research, International Journal of Logistics: Research and Applications, and The Journal of Defense Modeling and Simulation.

Member AF Modeling and Simulation Workforce Development Working Group.

**MOORE, JAMES T., [COA]**

Advisor to Student INFORMS chapter, MORS student chapter, and Omega Rho international operations research society.

Associate Editor for journal Military Operations Research.

Member of Editorial Board for International Journal of Operational Research.

Military Operations Research Society (MORS) Working Group 18 (Mobility and Transport of Forces) Chair.

MAS Cluster Chair and a MAS session chair for INFORMS 2007 conference.

Judge for student competition at the 2007 MORS Education Colloquium and Professional Development Conference.

Member: MORS, INFORMS, Tau Beta Phi, Omega Rho, and Phi Beta Kappa.

Referee for: IIE Transactions, Omega, and European Journal of Operational Research.

**OGDEN, JEFFREY A.,**

Reviewer for: Journal of Business Logistics, International Journal of Operations & Production Management, Journal of Operations Management, and Journal of Supply Chain Management.

Member: Institute for Supply Management (ISM), Decision Sciences Institute, and Council of Logistics Management.

**PERRY, MARCUS B.,**

Cluster Co-chair for Military Applications Track, INFORMS International, 08-11 July 2007, Puerto Rico.

Invited Editor representing Quality Engineering: Tutorial session on publishing engineering management research, 2007 Industrial Engineering Research Conference, 19-23 May, Nashville, TN.

Editorial Board Member, Quality Engineering.

Reviewer for: Military Operations Research, Computers & Industrial Engineering, International Journal of Production Research, European Journal of Operational Research, and Quality Engineering.

**ROESENER, AUGUST G., Maj**

Member: Military Operations Research Society and Air Force Operations Research Society.

## **5.6. DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT**

Access Phone: 937-255-2998, DSN 785-2998

Fax: 937-656-4699, DSN 986-4699

Homepage: <http://www.afit.edu/en/env/>

|              |                                                                                             |            |
|--------------|---------------------------------------------------------------------------------------------|------------|
| <b>5.6.1</b> | <b><u><a href="#">MASTER'S THESES</a></u></b>                                               | <b>156</b> |
| <b>5.6.2</b> | <b><u><a href="#">GRADUATE RESEARCH PAPERS</a></u></b>                                      | <b>160</b> |
| <b>5.6.3</b> | <b><u><a href="#">FUNDED RESEARCH PROJECTS</a></u></b>                                      | <b>162</b> |
| <b>5.6.4</b> | <b><u><a href="#">REFEREED JOURNAL PUBLICATIONS</a></u></b>                                 | <b>163</b> |
| <b>5.6.5</b> | <b><u><a href="#">REFEREED PRESENTATIONS</a></u></b>                                        | <b>165</b> |
| <b>5.6.6</b> | <b><u><a href="#">SUBSTANTIAL CONSULTATIONS</a></u></b>                                     | <b>166</b> |
| <b>5.6.7</b> | <b><u><a href="#">BOOKS &amp; CHAPTERS IN BOOKS</a></u></b>                                 | <b>167</b> |
| <b>5.6.8</b> | <b><u><a href="#">OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</a></u></b> | <b>168</b> |

## **5.6.1. MASTER'S THESES**

### **5.6.1.1. COST ANALYSIS (GCA)**

- BROAS, TINA M., *The Effect of Downsizing on Attrition Rates in the Department of Defense (DoD)*. AFIT/GCA/ENV/07-M1, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.
- BRYANT, MICHAEL, *Forecasting the KC-135 Cost Per Flying Hour: A Panel Data Analysis*. AFIT/GCA/ENV/07-M2, Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.
- BURRELL, DERREN.P., *An Analysis of the Military Retirement System: How Does Retirement Return Influence Retention?* AFIT/GCA/ENV/07-M3. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.
- COLLUP, JUSTIN W., *Forecasting Demand for Civilian Pilots: A Cost Savings Approach to Managing Air Force Pilot Resources*. AFIT/GCA/ENV/07-M4. Faculty Advisor: Lt Col Jeffery S. Smith. Sponsor: N/A.
- FUERING, JEFFERY C., *The Impact of Human Capital on the Cost of Air Force Acquisition Programs*. AFIT/GCA/ENV/07-M5. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: AFCAA.
- GIACOMAZZI, MICHAEL P., II, *An Analysis of the Impact of Defense Acquisition Reforms and External Factors on Schedule Growth of Defense Weapon Systems*. AFIT/GCA/ENV/07-M6. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.
- RUTER, PHILIP E., II, *Cost Growth in Weapons Systems: Re-Examining Rubber Baselines and Economic Factors*. AFIT/GCA/ENV/07-M9. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.
- STELLY, JOHN M., *Price Vs. Performance: The Value Of Next Generation Fighter Aircraft*. AFIT/ENV/GCA/07-M10. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

### **5.6.1.2. ENGINEERING MANAGEMENT (GEM)**

- AFTANAS, JASON M., *Optimizing the Prioritization of Natural Disaster Recovery Projects*. AFIT/GEM/ENS/07-01. Faculty Advisor: Maj. Shane A. Knighton. Sponsor: ACC/A7-2 (CE).
- BRYANT, SCOTT A., *Geospatial Informational Security Risks and Concerns of the U.S. Air Force GeoBase Program*. AFIT/GEM/ENV/07-M1. Faculty Advisor: Dr. Michael R. Grimaia. Sponsor: USAF GIS Support Center.
- CHOI, PETER M., *The Effects of Social Network Centrality on Group Satisfaction*. AFIT/GEM/ENV/07-M2. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.
- DALBY, TIMOTHY D., *Quantification of Risk for USAF Fire and Emergency Services Flights as a Result of Shortages in Manpower*. AFIT/GEM/ENS/07-02. Faculty Advisor: Maj Shane A. Knighton. Sponsor: AFCEA/CE.
- DIAZ, DANIEL, JR., *Diffusion of Innovation: Factors Promoting Interest in Solar Photovoltaic Generation Systems within Air Force Installations*. AFIT/GEM/ENV/07-M3. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEA.
- DUNCAN, DAVID J., *Rapid Runway Repair (RRR): an Optimization for Minimum Operating Strip (MOS) Selection*. AFIT/GEM/ENV/07-M4. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.
- FALCONE, JEFFREY T., *Using Value-Focused Thinking to Evaluate the Use of Innovative Stormwater Management Technologies on Air Force Installations*. AFIT/GEM/ENV/07-M5. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFCEE.

KWAN, KELLY E., *Selecting Electricity Generation Sources in Remote Locations*. AFIT/GEM/ENV/07-M7. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: National Park Service.

LOW, BRIAN R., *Mapping Change Management: A Co-citation Analysis*. AFIT/GEM/ENV/07-M8. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

MAIORANO, ERIKA E., *Decision Analysis with Value Focused Thinking as a Methodology to Select Buildings for Deconstruction*. AFIT/GEM/ENV/07-M9. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: WPAFB, Env. Mgt. (AFMC).

MCCOURT, MICHAEL J., *A Decision Model for Selecting Energy Efficient Technologies for Low-Sloping Roof Tops using Value-Focused Thinking*. AFIT/GEM/ENS/07-03. Faculty Advisor: Lt Col Jeffery D. Weir. Sponsor: AFCESA/CE.

POWELL, WILLIAM C., *Development of a Screening Model for Design and Costing of an Innovative Tailored Granular Activated Carbon Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/07-M12. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SECODY, ROLAND E., *Modeling In Situ Bioremediation of Perchlorate-Contaminated Groundwater*. AFIT/GEM/ENV/07M-13. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: AFCEE/TD.

SPEER, BENJAMIN G., *A Value-Focused Thinking Model for the Selection of the Best Rigid Pavement Partial-Depth Spall Repair Material*. AFIT/GEM/ENS/07-04. Faculty Advisor: Maj Shane A. Knighton. Sponsor: HQ AFCESA.

THEONY, CLIFFORD M., *The Net Effects of Social Network Density and Organizational Citizenship Behavior on Performance*. AFIT/GEM/ENV/07-M14. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

TONEY, ROBERT P., *Management Versus Non-Management Knowledge Transfer From Training To Real Work Environments: A Meta-Analysis*. AFIT/GEM/ENV/07-M15. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

VALENCIA, VHANCE V., *A Project Manager's Personal Attributes as Predictors for Success*. AFIT/GEM/ENV/07-M16. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFCEE.

WALDRON, JAMES M., *Characterization of Chlorinated Ethene Degradation in a Vertical Flow Constructed Wetland*. AFIT/GEM/ENV/07-M17. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

#### **5.6.1.3. ENVIRONMENTAL ENGINEERING AND SCIENCE (GES)**

DIETZ, JOHN M., *Microbial Degradation of Fuel Oxygenates under Aerobic Conditions*. AFIT/GES/ENV/07-M1. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: USEPA National Risk Management Research Laboratory.

GRACE, STEPHEN T., *The Effect of Orthophosphate as a Copper Corrosion Control Inhibitor in High Alkalinity Drinking Water Systems*. AFIT/GES/ENV/07-M2. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: USEPA Office of Research and Development.

HUDOCK, DAVID M., *Biofiltration as a Viable Alternative for Air Pollution Control at Department of Defense Surface Coating Facilities*. AFIT/GES/ENV/07-M3. Faculty Advisor: Lt Col David A. Smith. Sponsor: CNAF.

TY, ANTHONY R., *Aerosolization and TaqMan PCR Detection/Quantification of Bradyrhizobium japonicum USDA 110 as a Biowarfare Simulant*. AFIT/GES/ENV/07-M4. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

#### **5.6.1.4. INFORMATION RESOURCE MANAGEMENT (GIR)**

ALSOP, ALAN S., *Beyond Passwords: Usage and Policy Transformation*, AFIT/GIR/ENV/07-M1. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCA/ECAI.

BAILEY, LANDON C., *Refinement of an Instrument to Assess Readiness for Knowledge Management*. AFIT/GIR/ENV/07-M2, Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

BLAIR, AARON M., *Assessing Perceptions of Knowledge Management Maturity/Capabilities: A Case Study of SAF/FM*. AFIT/GIR/ENV/07-M3, Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: SAF/FMP.

BOYD, EDWARD K., *Professionalism in the USAF: A Comparative Analysis of Commissioned Officers with Non-Commissioned Officers*. AFIT/GIR/ENV/07-M4, Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: AETC.

BLOOD, DEBORA L., *Predicting the Benefits, Barriers, and Bridges for USAF Expeditionary Combat Support System Implementation*. AFIT/GIR/ENV/07-01. Faculty Advisor: Lt Col Barry L. Brewer. Sponsor: HQ AF/A4IT.

BRYANT, ADAM R., *Developing a Framework for Evaluating Organizational Information Assurance Metrics Programs*. AFIT/GIR/ENV/07-M5, Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: NASA JPL.

CAIRO, LUIS N., *An Analysis of the Deployment of System Oriented Architecture Environments in Air Force Combined Air Operations Centers*. AFIT/GIR/ENV/07-M6. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: 46TS/OGEA (AFMC).

CATES, MICHAEL S., *Corporate Entrepreneurship Assessment Instrument (CEAI): Refinement and Validation of a Survey Measure*. AFIT/GIR/ENV/07-M7. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CZUMAK, MICHAEL N., III, *Recommendations for a Standardized Program Management Office (PMO) Time Compliance Network Order (TCNO) Patching Process*. AFIT/GIR/ENV/07-M8. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFNOC/DET1 (8AF).

FOREMAN, JAMES D., *Predicting the Effect of Longitudinal Variables on Cost and Schedule Performance*. AFIT/GIR/ENC/07M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: N/A.

FORTSON, LARRY W., JR., *Towards the Development of a Defensive Cyber Damage and Mission Impact Methodology*. AFIT/GIR/ENV-M9. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/HEX (AFMC).

HEATH VAN HORN, MATHEW J., *An Analysis of the Balance of Management, Technical and Leadership Progression through the Three USAF Officer Tiers*. AFIT/GIR/ENV/07-M10. Faculty Advisor: Dr. Alan Heminger. Sponsor: SOC/DEO/SOS (AETC).

LUNAS, FREDERIC W., *Triangulating Social Capital Measurement for Turnover Research: Applications to the U.S. Military*. AFIT/GIR/ENV/07-M11. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

- MARSHALL, TOMMY V., II, *A Comparative Assessment of Knowledge Management Leadership Approaches within the Department of Defense*. AFIT/GIR/ENV/07-M12. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.
- POLOMSKY, ROBERT D., *Air Mobility Command's En Route Support Infrastructure: a Construct of Aircraft Type and Geographic Location Utilized to Assess En Route Aircraft Logistics Support*. AFIT/GIR/ENV/07-J2. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: HQ AMC/A49.
- ROEHL, JOHN M., *Internet Protocol Geolocation: Development of a Delay-Based Hybrid Methodology for Locating the Geographic Location of a Network Node*. AFIT/GIR/ENV/07-M15. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: N/A.
- SCURLOCK, ANTONIO J., *Strategic Planning to Conduct Joint Force Network Operations: A Content Analysis of NETOPS Organizations Strategic Plans*. AFIT/GIR/ENV/07-M18. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: DONCIO.
- SIMMERS, DOUGLAS M., *Identifying Knowledge, Skill, and Ability Requirements for 33S Officers in Deployed Environments*. AFIT/GIR/ENV/07-M16. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: ACC/A600 (ACC).
- SMITH, TIFFINY S., *In Pursuit of an Aptitude Test for Potential Cyberspace Warriors*, AFIT/GIR/ENG/07-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315 IOS (8<sup>th</sup> Air Force).
- SPRINGS, ANITA C., *Assessing the Impact of the Work Environment on Training Transfer: An Investigation of the Air Force Acquisition Management Course*. AFIT/GIR/ENV/07-J4. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.
- WRIGHT, GARY L., *A Comparative Assessment of Knowledge Management Education Across the United States Department of Defense*. AFIT/GIR/ENV/07-M17. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: SAF/XC.

#### **5.6.1.5. RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)**

- HEUK, WILLIAM D., *A Future-Based Risk Assessment for the Survivability of Long Range Strike Systems*. AFIT/GRD/ENS/07-01. Faculty Advisor: Maj Gary W. Kinney. Sponsor: AFRL/VA
- MITCHELL, ROBERT H., JR., *Real Options as a Strategic Management Framework: A Case Study of the Operationally Responsive Space Initiative*. AFIT/GRD/ENV/07-M2. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A
- PARRISH, MICHAEL R., *A Meta-Analysis of Questionnaire Response Rates in Military Samples*. AFIT/GRD/ENV/07-M4. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.
- ROMERO, MICHAEL A., *Identifying and Assessing Effective Mechanisms for Technology Transfer*. AFIT/GRD/ENV/07-M6. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/XR

## 5.6.2. GRADUATE RESEARCH PAPERS

### 5.6.2.1. STRATEGIC LEADERSHIP (ISL)

BROOKS, JEFFERY L., ELBERT L. COLEMAN JR. and GLEN M. GENOVE, *Investigating Air Operations Center (AOC) Knowledge Management Requirements*. Faculty Advisor: Lt Col Summer E. Bartczak. Sponsor: N/A.

CAMPBELL, JASON L., *A Qualitative Analysis of the Possible Effects of "The New Process-Aligned Logistics Readiness Squadron" Structure on Heavily Contracted Logistics Readiness Organizations*. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: AFMC/A4R and 88ABW, Logistics Readiness Division.

CHAVASSE, NICHOLAS H., III, MATTHEW T. FRITZ and BRIAN F. ZANE, *Evaluating of a Non-Traditional Element Detection Device*. Faculty Advisor: Maj Sonia E. Leach. Sponsor: AFRL.

COLEMAN, ELBERT L. JR., See BROOKS, JEFFERY L.

CONNOLLY, MICHAEL W., FREDERICK A. HUNT JR. and RICHARD T. KOCH, *Managing Airspace Deconfliction in a Robust Unmanned Aerial Vehicle Environment*. Faculty Advisor: Lt Col Patrick D. Kee. Sponsor: N/A.

FALARDEAU, LARA L., *Downsizing Triage: Do the Survivors of the Recent AF Downsizing Intend to Stay?* Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: HQ Air Staff A-1.

FAUTH, RODNEY L., JR., *Ethics in the Military: A Study of Major Themes in Recent Professional Writing*. Faculty Advisor: Dr. Kirk A. Vaughan. Sponsor: N/A.

FRITZ, MATTHEW T., See CHAVASSE, NICHOLAS H., III.

GENOVE, GLEN M., See BROOKS, JEFFERY L.

HILL, WILLIAM R., II, *Managing the Force Development of the AF Communications Officer into the Future*. Faculty Advisor: Col Robyn M. King. Sponsor: SAF/XC

HOLBEIN, BRIAN K., *An Analysis of the Satellite Command and Control Operator Training System*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 50<sup>th</sup> Satellite Operations Group.

HOLT JEFFREY D., *A Study of Optimal Commander Tour Length*, Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

HUNT, FREDERICK A., JR., See CONNOLLY, MICHAEL W.

HURST, BRITT K. and MARK D. ORIELLY, *Comparing the Combat Readiness of the Objective Wing and Combat Wing Organizational Structures*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

JONES, ROY A., III, *Validation of Air Force Change Education and Management Processes*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFMC/A8C.

KOCH, RICHARD T., See CONNOLLY, MICHAEL W.

KOTKIN, JEREMY S., *A Historical Analysis of Western Intervention in the Middle East to Provide a Way Ahead for the Iraq War and Middle Eastern Policy*. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

MATHES, MICHAEL N., *Concepts for Defeating Pro-Nav Air to Air Missiles*. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: NASIC.

ORIELLY, MARK D., See HURST, BRITT K.

PHILLIPS, MICHAEL E., See HILL, WILLIAM R., II.

POLLOCK, PETER M., *Relationship Between Duty History and Selection for In-residence PME (IDE Specific)*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

ROBINSON, BRANDON J., See HILL, WILLIAM R., II.

SEIBERT, HARRY L., JR., *A-10 Realignment: Factors Affecting Future Sortie Production at Davis-Monthan Air Force Base*. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: 355<sup>th</sup> AMXS.

TANGLAO, RAINIER, See HILL, WILLIAM R., II.

TELEGA, TIMOTHY M., *A Study of Optimal Commander Tour Length*. Faculty Advisor: Col Robyn M. King. Sponsor: N/A.

VILLELLA, MATTHEW C., *The Attributes of Appropriate Close Air Support Ordinance*. Faculty Advisor: Dr. Michael J. Hicks. Sponsor: N/A.

WALKER, RANDAL D., *Validation of Air Force Change Education and Management Processes*. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: AFMC/A8C.

WOLLARD, JASON Z., *Inferences Concerning Junior Officers' Abilities and Traits Based on United States Air Force Officer Evaluation Reports*. Faculty Advisor: Daniel T. Holt. Sponsor: N/A.

ZANE, BRIAN F., See CHAVASSE, NICHOLAS H., III.

### **5.6.3. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliation is listed in [ ] if applicable.

#### **BADIRU, ADEDEJI B.,**

“Development of a Technology Based Medical Triage and Situational Awareness Tool for Use in a CBRN Contingency/Deployed Environment.” Sponsor: SAF/SG. Funding: \$335,341.

#### **BARELKA, ALEXANDER J., Maj,**

“The Influence of Pop-Culture IT.” Sponsor: AFRL/HE. Funding: \$80,000.

#### **GOLTZ, MARK N.,**

“An Evaluation of Current Mass Flux Measurement Practices and Guidelines for Their Performance.” Sponsor: EPA. Funding” \$24,749.

“Reducing Ion Exchange Treatment Costs by up to 40% using Tailored Activated Carbon.” Sponsor: Environmental Security Technology Certification Program. Funding: \$55,800.

#### **GRMAILA, MICHAEL R.,**

“Internet Protocol Geolocation: The Determination of a Geographic Location within a Metropolitan Area.” Sponsor: NASIC. Funding: \$10,000.

“A Sensitivity Analysis of Delay-Based Internet Protocol Geolocation Methodologies.” Sponsor: NASIC. Funding: \$21,987. [CCR]

“Towards Real-Time Cyber Incident Mission Impact Assessment.” Sponsor: AFRL/HE. Funding: \$40,000. [CCR]

#### **HICKS, MICHAEL J.,**

“Cost Analysis Funding.” Sponsor: AFCAA. Funding: \$20,000.

#### **REHG, MICHAEL T.,**

“Effectiveness of the International Military Education and Training Program.” Sponsor: DISAM. Funding: \$23,000.

#### **SHELLEY, MICHAEL L.,**

“Bioremediation of Chlorinated Ethenes in Constructed Wetlands.” Sponsor: 88ABW/CE. Funding: \$3,000.

#### **STROUBLE, DENNIS D.,**

“Air Force Center for Systems Engineering A-10 Systems Engineering Case Study.” Sponsor: AFIT/SY. Funding: \$31,000.

#### 5.6.4. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliation is listed in [ ] if applicable.

##### **BADIRU, ADEDEJI B.,**

Thal, Alfred E.; A. B. Badiru; and R. Sawhney, "Distributed Project Management for New Product Development," *International Journal of Electronic Business Management*, Vol. 5, No. 2, 2007, pp. 93-104.

Omitaomu, Olufemi A. and Adedeji B. Badiru, "Fuzzy Present Value Analysis Model for Evaluating Information System Projects," *Engineering Economist*, Vol. 52, 2007, pp. 157-178.

Olufemi A. Omitaomu, Myong K. Jeong, Adedeji B. Badiru, and J. Wesley Hines (2007). "On-Line Support Vector Regression for Machine Condition Monitoring with Applications to Motor Shaft Misalignment Prediction." *IEEE Transactions on Systems, Man, and Cybernetics: Part C*, 37(5), 2007 962-970.

##### **BLECKMANN, CHARLES A.**

Wagner, A. J. , C.A. Bleckmann, R. C. Murdock, A.M. Schrand, J.J. Schlager, S. M. Hussain. 2007. "Cellular Interactions of Different Forms of Aluminum Nanoparticles in Rat Alveolar Macrophages." *Journal of Physical Chemistry B*. 111:7353-7359.

##### **GOLTZ, MARK N.,**

Goltz, M.N., S. Kim, H. Yoon, J. Park, "Review of Groundwater Contaminant Mass Flux Measurement." *Environmental Engineering Research*, 12(4):176-193, 2007.

Wood, R.C., J. Huang, M.N. Goltz, "Modeling Chlorinated Solvent Bioremediation Using Hydrogen Release Compound (HRC)." *Bioremediation Journal*, 10(3):129-141, 2006.

##### **GRMAILA, MICHAEL R.,**

V. P. Hubenko, R. A. Raines, R. O. Baldwin, B. E. Mullins, R. F. Mills, and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-Keying Requirements," *IEEE Network*, vol. 21, no. 4, pp. 51-56, 2007 [CCR].

M.R. Grimaila, "RFID Security Concerns," *The Information System Security Association (ISSA) Journal*, pp. 30-35, Feb. 2007 [CCR].

T. Bailey and M.R. Grimaila, "Information Technology, Terrorism, and the Transformation of the Islamic Mass-Culture in the Arab World," *Terrorism and Political Violence Journal*, Vol. 18, No. 4, pp. 523-543, Winter 2007.

V.P. Hubenko Jr., R.A. Raines, R.F. Mills, R.O. Baldwin, B.E. Mullins, and M.R. Grimaila, "Improving Global Information Grid's Performance Through Satellite Communications Layer Enhancements", *IEEE Communications*, Nov. 2006, Vol. 44, No. 11, pp. 66-72 [CCR].

##### **HOLT, DANIEL T., LtCol,**

Holt, D. T., Bartczak, S. E., Clark, S. W., & Trent, M. R. (2007). "The development of an instrument to assess readiness for knowledge management." *Knowledge Management Research & Practice*, 5(2), 75-92.

Rutherford, M. W. & Holt, D. T. (2007). "Corporate entrepreneurship: An empirical look at the innovativeness dimension and its antecedents." *Journal of Organizational Change Management*, 20(3), 429-446.

- Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S. (2007). "Readiness for organizational change: The systematic development of a scale." *Journal of Applied Behavioral Science*, 43(2), 232-255.
- Holt, D. T., Rutherford, M. W., & Clohessy, G. R. (2007). "Corporate entrepreneurship: An empirical look at individual characteristics, context, and process." *Journal of Leadership & Organizational Studies*, 13(4), 40-54.
- Holt, D. T., Rehg, M. T., Lin, J. S., & Miller, J. C. (2007). "An application of the unfolding model to explain turnover in a sample of military officers." *Human Resource Management*, 46(1), 35-49.

**REHG, MICHAEL T.**

- Moore, T. D., Johnson, A. W., Rehg, M. T., and Hicks, M. J. 2007. "Quality assurance staffing impacts in military aircraft maintenance units.", *Journal of Quality in Maintenance Engineering*, 13(1): 33-48.
- Holt, D. T., Rehg, M. T., Lin, J. S., & Miller, J. C. 2007. "An application of the unfolding model to explain turnover in a sample of military officers." *Human Resource Management*, 46(1): 35-49.

**SLAGLEY, JEREMY M., Maj,**

- Slagley, J.M., and S.E. Guffey (2007). "Effects of Cross-sectional Partitioning on Active Noise Control in Round Ducts." *Journal of Occupational and Environmental Health*. 4(10): 751-761
- Slagley, J.M., and S.E. Guffey (2007). "Effects of Diameter on Active Noise Control in Rectangular and Round Ducts." *Journal of Occupational and Environmental Hygiene*, 4(7): 492-501.

**SMITH, JEFFREY S., LtCol,**

- Smith, J., Ken Small, and H. Semih Yildirim, "Ownership Structure and Golden Parachutes: Evidence of Credible Commitment or Incentive Alignment?", *Journal of Economics and Finance*, 31:3, Fall 2007, pp 368 – 382.
- Smith, J. and M. McKee, "People vs. Prairie Chickens Revisited: Stated Preference with Explicit Non-Market Tradeoffs" *Defense and Peace Economics*, 18:3, June 2007, pp 223 – 244.

**THAL, ALFRED E., Jr.**

- Thal, A.E., Jr., A.B. Badiru, and R. Sawhney, "Distributed Project Management for New Product Development," *International Journal of Electronic Business Management*, 5(2):93-104, 2007.
- Brazel<sup>1</sup>, Carlos, Alfred E. Thal, Jr.<sup>2</sup>, and Jeffrey D. Weir, "Evaluating the Effectiveness of Utility Privatization Efforts," *Journal of Facilities Management*, 5(2):86-102, 2007.

**TURNER, JASON M., Maj**

- Bartczak, S. E., Turner, J. M., & England, E. C. (2008). "Challenges in developing a knowledge management strategy: A case study of the Air Force Material Command." *International Journal of Knowledge Management*, 4(1): 46-50.

### **5.6.5. REFEREED PRESENTATIONS**

#### **BADIRU, ADEDEJI B.**

Badiru, Adedeji "OR/MS Modeling for AFSSO21 Process Improvement in US Air Force," presented at INFORMS Annual Conference, Seattle, WA, Nov 7, 2007.

Thal, Al; Shahady, David; Badiru, Adedeji; and Bedingfield, John, "Incorporating Customer Values in Trade-Off Decisions," presented at INFORMS Annual Conference, Seattle, WA, Nov 7, 2007.

Badiru, Adedeji, "Communication, Cooperation, and Coordination Model for Process Improvement of C2 Projects", *Proceedings of DOD's 12<sup>th</sup> International Command and Control Research and Technology Symposium (ICCRTS)*, Newport, RI, June 18-21, 2007.

Badiru, Adedeji, Chuck Leakeas, and Sonia Leach, "MatLab-Based Modeling and Simulation of Large Project Networks," *Proceedings of 2007 Industrial Engineering Research Conference (IERC)*, Nashville, TN, May 18-21, 2007.

Badiru, Adedeji, Chuck Leakeas, and Sonia Leach, "Dynamic Cyber Systems Forecast Scenario Planning and Simulation," *Proceedings of 2007 Industrial Engineering Research Conference (IERC)*, Nashville, TN, May 18-21, 2007.

#### **GRIMAILA, MICHAEL R.,**

M.R. Grimaila, "Information Security Management: Mission Impact Assessment," Presented at the Americas Conference on Information Systems (AMCIS 2007), Keystone, CO; August 2007.

M.R. Grimaila, "Developing a Framework to Improve Information Assurance Battlespace Knowledge," Presented at the International Conference on Information Warfare and Security (ICIW 2007), Naval Postgraduate School; Monterey, CA; March 2007.

#### **HALVERSON, KENT C., LtCol,**

Halverson, K.C., Moore G., & Holt, D.T. (2007). The longitudinal effects of self-monitoring and locus of control on social network position in friendship networks. Academy of Management Annual Conference, Philadelphia, PA.

#### **HEMINGER, ALAN R.**

Budai, Kevin G., Alan R. Heminger, and Summer Bartczak, "Assessing a Knowledge Management (KM) Project Selection Framework", *Proceedings of the Southern Association for Information Systems (SAIS)*, March 2007

Harp, D., S. Bartczak, T. Peachey, and A. Heminger, "An Assessment of Topic Areas Covered in KM Journals", *Proceedings of the Information Resource Management Association*, May 2007

Balda, D., S. Bartczak, R. A. Syler, A. R. Heminger, "A Descriptive Case Study of Electronic Records Taxonomy Development at the Central Intelligence Agency", *Proceedings of the Association for Information Systems Conference of the Americas (AMCIS)*, August 2007

#### **HOLT DANIEL T., LtCol,**

Rehg, M. T., Holt, D. T., & Toney, R. P. (2007). A comparative study of factors affecting training transfer. Paper presented at the annual meeting of the Southern Management Association, Nashville, TN, November 7 – 10.

Heilmann, S. G., Holt, D. T., & Rilovick, C. (2007). Effects of career plateauing on turnover: A test of a model. Paper presented at the annual meeting of Midwestern Academy of Management, Kansas City, MO, October 4 – 6.

Holt, D. T., Rutherford, M. W., & Kuratko, D. F. (2007). F-PEC scale of family influence: A refinement. In *Proceedings of the Annual Meeting of the Academy of Management*, Philadelphia, PA, August 3 – 8.

Halverson, K. C., Moore, G. J., & Holt, D. T. (2007). Longitudinal effects of self-monitoring and locus of control on social network position. Paper presented at the annual meeting of the Academy of Management, Philadelphia, PA, August 3 – 8.

Rutherford, M. W., Kuratko, D. F., & Holt, D. T. (2007). The family business theory jungle: Competing theories on “familiness” and performance. Paper presented at the *Theories of the Family Enterprise* academic conference, Starkville, MS, May 16 – 18.

Holt, D. T., Rutherford, M. W., Davis, T. W., & Bartczak, S. E. (2007). Corporate Entrepreneurship Assessment Instrument (CEAI): A refinement for the Department of Defense. In *Proceedings of the Annual Meeting of the Western Academy of Management*, Missoula, MO, March 21 – 24.

#### **PEACHY, TODD A., Maj**

Peachey, T., Bartczak, S. and Hall, D., "Investigating knowledge transfer: A preliminary model to improve our understanding of the literature," Presented at the 13th Americas Conference on Information Systems 2007, Keystone CO, August 2007.

#### **TURNER, JASON M., Maj**

Turner, J. M.. *Towards a social affordances perspective of media capabilities and interface design.* Proceedings of the American Society for Information Science and Technology 2007 Annual Meeting, Milwaukee, WI, October 2007.

#### **WEST, CHRISTOPHER, Lt.Col**

West C. and Landaeta R. The Challenge of Studying Team Cognition in Control Center Environments. Conference Paper, American Society for Engineering Management Conference, Chattanooga, TN. November 2006.

### **5.6.6. SUBSTANTIAL CONSULTATIONS**

#### **BADIRU, ADEDEJI B.**

Badiru, Adedeji B., “Getting Things done through project management,” Wright State University, Center for Performance Excellence, October 10, 2007.

#### **GRMAILA, MICHAEL R.,**

Grimaila, Michael, R., “Defense Advance Research Projects Agency (DARPA) Mission Assured Networking Workshop Review Group, Crystal City, VA., Sep. 2007.

Grimaila, Michael, R., “DoD Chief Information Officer (CIO) Networks and Information Integration (NII) Information Assurance Best Practices Study Group, Crystal City, VA., Aug. 2007-Present.

Grimaila, Michael, R., “Information Systems Audit and Control Association (ISACA) Security Metrics Project”, Chicago, IL, Feb. 2007-Present.

Grimaila, Michael, R., “Air Force Material Command Inspector General Inspection Database Analysis Project”, Chicago, IL, Jan. 2007-Aug.2007.

**HEMINGER, ALAN R.,**

“Identification and Selection of Subject Matter Experts”, for the Defense Threat Reduction Agency (DTRA), December 2006

**REHG, MICHAEL T.**

Rehg, M. T., Effectiveness of the International Military Education and Training (IMET) Program; Analysis of Survey data for the Defense Institute of Security Assistance Management; 1 Dec 2006 – 30 Sep 2007.

Rehg, M. T. Measurement of the ASC Balanced Scorecard for Aeronautical Systems Center/XPX. December 2006.

**5.6.7. BOOKS AND CHAPTERS IN BOOKS**

**BADIRU, ADEDEJI B.**

Badiru, Adedeji B.; Abi Badiru; Ade Badiru, *Industrial Project Management*. Boca Raton: Taylor & Francis CRC Press, 2007.

Badiru, Adedeji B. and O. A. Omitaomu, *Computational Economic Analysis for Engineering and Industry*. Boca Raton: Taylor & Francis CRC Press, 2007.

**HOLT, DANIEL T., LtCol,**

Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S. (2007). Toward a comprehensive definition of readiness for change: A review of research and instrumentation. In W. A. Pasmore and R. W. Woodman (Eds.) *Research in Organizational Change and Development* (Vol. 16, pp. 289 – 336). Oxford, UK: Elsevier.

**PEACHEY, TODD A., Maj,**

Peachey, T., Hall, D., and Cegielski, C. (2007) Chapter IV: Knowledge Management Research: Are We Seeing the Whole Picture? In M. E. Jennex (Ed) *Knowledge Management in Modern Organizations* (pp. 30-50). Hershey, PA, IGI Publishing.

### **5.6.8. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

#### **BADIRU, ADEDEJI B.**

Badiru, Adedeji B.; “Systems Engineering Approach to Global Health Care Delivery,” Keynote Address, University of Cincinnati Health Symposium, Cincinnati, OH, October 11, 2007.

Badiru, Adedeji B.; “How to Succeed in the OR/MS Academic Profession,” Invited Distinguished Panelist, 2007 INFORMS Regional Conference, Northwestern University, Evanston, IL, August 24-25, 2007.

Badiru, Adedeji B., LtCol David Smith, and Major Jeremy Slagley, “Contemporary Collaborative Research for Occupational Health,” Invited Seminar, College of Nursing, University of Tennessee, Knoxville, TN, April 20, 2007.

Badiru, Adedeji B., “Importance of Undergraduate Research in Science and Engineering Curriculum,” Invited Keynote Address, Central State University, Wilberforce, OH, April 14, 2007.

Badiru, Adedeji B., “Engineering and Enterprise Systems Management for Operational Efficiency,” Invited Seminar, Tinker Air Force Base, Oklahoma City, OK, April 12, 2007.

Badiru, Adedeji B., “OR/MS Modeling for AFSSO21 Implementation,” Invited Speech, Department of Industrial Engineering, University of Louisville, Kentucky, March 30, 2007.

Badiru, Adedeji B., “Technical Systems Project Management,” Invited Training Seminar, NASA Glenn Research Center/Ohio Aerospace Institute, Cleveland, OH, March 27, 2007.

#### **BARELKA, ALEXANDER J., Maj,**

Awarded research grant with AFRL to investigate the influence of “new media”. A project sponsored by the AFRL/HEX and funded with \$105K in 07. Work will continue until the end of CY 2009 and could reach a total value of over \$700K. Project currently completing data collection for the first of five stages.

#### **BLECKMANN, CHARLES A.**

Reviewer – *Environmental Engineering Science* (2)

Reviewer – National Institute of Standards and Technology (NIST) Advanced Technology Program Proposals

Reviewer – Environmental Security Technology Certification Program (ESTCP)

Technical Reviewer – USEPA National Risk Management Research Laboratory

#### **GOLTZ, MARK N.,**

Visiting Scholar, Stanford University, 2007.

Goltz, M.N. Waterborne CBRN Transport Modeling, AFIT/ENV CBRN Research Collaboration Symposium, Dayton OH, 6 September 2007.

Goltz, M.N., Application of Circulating Wells for *In Situ* Treatment of Contaminated Groundwater and Groundwater Contaminant Flux Quantification, Korea Advanced Institute for Science and Technology (KAIST), 5 July 2007.

Goltz, M.N., Sustainable Operations in the U.S. DoD, Korea National Defense University, Seoul, Korea, 3 July 2007.

Goltz, M.N., Modeling and Measuring the Benefits of a Groundwater Contaminant Source Remediation, Yonsei University, Seoul, Korea, 21 June 2007.

Goltz, M.N., Modeling and Measuring the Benefits of Remediating a Groundwater Contamination Source, Hanyang University, Seoul, Korea, 20 June 2007.

Mackay, D.M., M. Einarson, P. Kaiser, M. Inoue, I. Chakraborty, M. Velasco, C. Justice, S. Goyal, M. Brooks, M. Annable, S. Rao, K. Hatfield, M. Goltz, and J. Huang, Assessing Performance of Source or Plume Remediation: Evaluation of Methods, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Henderson, T., D. Liles, T. Peschman, F. Cannon, and M.N. Goltz, Demonstration Update: Tailored Granular Activated Carbon for Wellhead Perchlorate Treatment, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Wood, A.L., M. Annable, M.C. Brooks, C. Enfield, R. Falta, M.N. Goltz, J. Jawitz, and P.S.C. Rao, Field and Laboratory Evaluation of DNAPL Remedial Performance, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

Goltz, M.N., J. Huang, D.E. Wagner, and J.L. Heiderscheidt, Modeling the Benefits of Groundwater Contaminant Source Remediation, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 28-30 November 2006.

#### **GRIMAILA, MICHAEL R.,**

M.R. Grimaila and L.W. Fortson, "Towards an Information Asset-Based Defensive Cyber Damage Assessment Process," Proceedings of the 2007 IEEE Computational Intelligence for Security and Defense Applications (CISDA 2007); Honolulu, HI; April 1-5, 2007.

A.R. Bryant and M.R. Grimaila, "Developing a Framework to Improve Information Assurance Battlespace Knowledge" Proceedings of the 2007 International Conference on Information Warfare and Security; Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

S.A. Bryant and M.R. Grimaila, "Security Risks in USAF Geospatial Information Sharing" Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

L.W. Fortson and M.R. Grimaila, "Development of a Defensive Cyber Damage Assessment Framework," Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007.

K. Edge, R. Raines, M.R. Grimaila, R. Baldwin, C. Reuter, and B. Bennington, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," Proceedings of the 2007 International Conference on Information Warfare and Security (ICIW 2007); Naval Postgraduate School, Monterey, CA; March 8-9, 2007.

M.R. Grimaila, J. Roehl, and J. Turner, "Internet Geolocation for Cyber Attack Attribution," Proceedings of the 2007 Phoenix Challenge Conference on Information Warfare and Security (ICIW 2007); Kirtland Air Force Base; Albuquerque, NM; Feb. 28-Mar. 1, 2007.

M.E. Blomme and M.R. Grimaila, "Merging Cultures: Integrating MASINT into Air Operations," Proceedings of the 2007 Phoenix Challenge Conference on Information Warfare and Security (ICIW 2007); Kirtland Air Force Base; Albuquerque, NM; Feb. 28-Mar. 1, 2007.

T. Levoy, M.R. Grimaila, and R. Mills, "A Methodology for Customizing Security Auditing Templates for Malicious Insider Detection," Proceedings of the 8th International Symposium on System and Information Security (ISSIS 2006); Sao Jose dos Campos, Sao Paulo, Brazil; Nov. 08-10, 2006.

M.R. Grimaila, "Cyber Incident Mission Impact Assessment Research Presentation," Air Force Information Operations Center, Lackland AFB; 33-IOS; San Antonio, TX; Sept. 2007.

M.R. Grimaila, "Information System Security Association (ISSA) Journal Editorial Advisory Board," 2004-Present.

M.R. Grimaila, "International Systems Security Engineering Association (ISSEA) Metrics Working Group," Jan. 2005-Oct. 2007. Contributor to ISO/IEC CD 27004 Security Metrics Standard (ISO/IEC JTC 1/SC27 N5460).

#### **SHELLEY, MICHAEL**

Amon<sup>1</sup>, Agrawal<sup>2</sup>, Shelley, Opperman<sup>3</sup>, Enright<sup>4</sup>, Clemmer<sup>3</sup>, Slusser<sup>5</sup>, Lach<sup>5</sup>, Sobolewski<sup>3</sup>, Gruner<sup>4</sup>, and Entingh<sup>5</sup>, "Development of a wetland constructed for the treatment of groundwater contaminated by chlorinated ethenes", *Ecological Engineering* 30 (1), pp 51-66, May 2007

McCormick-Brown, S., J.M. Slagley, and M.L. Shelley. *PBPK Model of Dermal Absorption of Aluminum Nanoparticles*. Graduate student poster presentation at the American Industrial Hygiene Conference and Exposition (AIHCE), 2-7 Jun 07, Philadelphia, PA.

#### **SLAGLEY, JEREMY M., Maj,**

McCormick-Brown, S., J.M. Slagley, and M.L. Shelley. *PBPK Model of Dermal Absorption of Aluminum Nanoparticles*. Graduate student poster presentation at the American Industrial Hygiene Conference and Exposition (AIHCE), 2-7 Jun 07, Philadelphia, PA.

Engineering Noise and Dust Controls in Underground Longwall Coal Mining National Institute for Occupational Safety and Health (NIOSH) Education and Resource Center (ERC) at University of Cincinnati (UC) Pilot Research Project (PRP) training grant

#### **SMITH, DAVID A., LtCol,**

Badiru, A.; Smith, D.; Grimaila, M.; Slagley, J.; Kee, P. and Thal, A. (2007), "IE Techniques Aid Air Force Disaster Response," Institute of Industrial Engineers, Online Digest, [www.iienet.org](http://www.iienet.org) September 18, 2007.

Smith, D. and Slagley, J. (2007). Graduate Education Opportunities at the Air Force Institute of Technology. Poster presentation at the DoD Force Health Protection Conference, 6-10 Aug, 2007, Louisville KY.

Smith, David A., Badiru A.B., Grimaila, M.R., Kee, P., Slagley, J., Thal A. Development of a Technology Based Medical triage and Situational Awareness Tool for Use in a CBRN Contingency/Deployed Environment. Funded amount: \$335,341.00, FY 2007, funded through the Air Force Surgeon General's office. Role: Co-PI (grant writer) and technical/research lead.

#### **STROUBLE, DENNIS**

A-10 Case Study for AFIT Center for Systems Engineering.

"Panel on NSA certifications" 2007 Southern Association for Information Systems, Jacksonville, FL, March, 2007.

**TURNER, JASON M., Maj**

Grimaila, M. R., Roehl, J., & Turner, J. (February-March 2007). *Internet Geolocation for Cyber Attack Attribution*. Proceedings of the 2007 Phoenix Challenge Information Operations Conference (PC 2007); Kirtland Air Force Base; Albuquerque, NM.

## **6. RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION**

The contents of this section are duplicated data, grouped by center. The information is previously listed within each project's specific department.

## **6.1. ADVANCED NAVIGATION TECHNOLOGY CENTER**

### **Advanced Navigation Technology Center (ANT)**

Director 255-3636 x4580

Executive Program Coordinator 255-3636 x4583

Laboratory Manager 255-3636 x4911

Homepage: <http://www.afit.edu/en/ant>

|              |                                             |            |
|--------------|---------------------------------------------|------------|
| <b>6.1.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>      | <b>174</b> |
| <b>6.1.2</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b> | <b>175</b> |
| <b>6.1.3</b> | <b><u>REFEREED PRESENTATIONS</u></b>        | <b>175</b> |
| <b>6.1.4</b> | <b><u>OTHER PUBLICATIONS</u></b>            | <b>176</b> |

### **6.1.1. FUNDED RESEARCH PROJECTS**

#### **BLUE, PAUL A., Maj,**

“Planning, Guidance and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/VA.  
Funding: \$30,000. [ANT]

#### **MARTIN, RICHARD K.,**

“Infrastructure Cost for ANT Center: Navigation using Multicarrier Signals of Opportunity.” Sponsor: AFRL/SN. Funding: \$24,250. [ANT]

#### **PETERSON, GILBERT L.,**

“Biologically Motivated Autonomous Navigation and Cooperative Control.” Sponsor: DAGSI. Funding: \$20,160. [ANT]

“CANIS-Related Navigation Research Projects for the ANT-Laboratory.” Sponsor: AFRL/SN. Funding: \$50,000. [ANT]

#### **RAQUET, JOHN F.,**

“ANT Center and Laboratory Support.” Sponsor: AFRL/SN. Funding: \$242,000. [ANT]

“Development of High Accuracy TSPI Systems.” Sponsor: 746<sup>th</sup> Test Squadron. Funding: \$45,900. [ANT]

“Indoor Navigation Using Signals of Opportunity Integrated with Other Sensors.” Sponsor: DARPA.  
Funding: \$68,750. [ANT]

“Overcoming Geometric Deficiencies in Pseudolite Navigation.” Sponsor: AFOSR. Funding: \$99,855.  
[ANT]

“Sub-Surface Navigation.” Sponsor: AFRL/SN. Funding: \$31,250. [ANT]

“Transition to Laboratory Testing of Two-Way Time Transfer Measurements for Navigation.” Sponsor: SAF. Funding: \$16,061. [ANT]

#### **SHEARER, CHRISTOPHER M., Maj,**

“Flight Dynamics and Control of High Altitude Long Endurance Sensorcraft.” Sponsor: AFRL/VA.  
Funding: \$10,000. [ANT]

#### **VASQUEZ, JUAN R., Lt Col,**

“Target Tracking and Data Communication for Angel Fire.” Sponsor: AFRL/SN. Funding: \$89,042.  
[ANT]

“Target Tracking for the Missile Defense Agency.” Sponsor: MDA. Funding: \$50,000.

#### **VETH, MICHAEL J., Maj,**

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: \$50,000.  
[ANT]

### 6.1.2. REFEREED JOURNAL PUBLICATIONS

#### PETERSON, GILBERT L.,

Peterson, G.L., and McBride, B.T., "Importance of Generalizability to Anomaly Detection," *Knowledge and Information Systems*. (electronic publication 24 March 2007, paper in press). [CCR]

Wardell, D.C., and Peterson, G.L., 2007, "Fuzzy State Aggregation and Policy Hill Climbing for Stochastic Environments," *International Journal of Computational Intelligence and Applications*, vol. 6:3, pp. 413-428. [ANT]

#### RAQUET, JOHN F.,

Veth, M. and J. Raquet, "Fusing Low-Cost Image and Inertial Sensors for Passive Navigation," *NAVIGATION: Journal of the Institute of Navigation*, Vol. 54, No. 1 (2007). [ANT]

#### VETH, MICHAEL J., Maj,

"Fusion of Low-Cost Inertial Systems for Precision Navigation," Veth, M.J., Raquet, J.R., *Journal of the Institute of Navigation*, Vol. 54, No. 1, pp. 11-20. [ANT]

### 6.1.3. REFEREED PRESENTATIONS

#### BLUE, PAUL A., Maj,

Burns, B., Blue, P., and M. Zollars: "Simulation of a Real-time Trajectory Generator for Automated Aerial Refueling with a Required Time of Arrival", Proceedings of the AIAA Modeling and Simulation Technologies Conference, Hilton Head, SC, August 2007. [ANT]

Zollars, M., Blue, P., and B. Burns: "Wind Corrected Flight Path Planning for Autonomous Micro Air Vehicles Utilizing Optimization Techniques", Proceedings of the AIAA Atmospheric Flight Mechanics Conference, Hilton Head, SC, August 2007. [ANT]

#### PETERSON, GILBERT L.

Woolley, B. and Peterson, G.L., Genetic Evolution of Hierarchical Behavior Structure, *GECCO 2007*, London, July 2007. (accepted March 2007). [ANT]

#### RAQUET, JOHN F.,

Dainty, B., J. Raquet, and R. Beckman, "Use of Two-Way Time Transfer Measurements to Improve Geostationary Satellite Navigation," *Proceedings of ION GNSS-2007*, Fort Worth, TX, Sep 2007. [ANT]

Raquet, J., M. Miller, and T. Nguyen, "Issues and Approaches for Navigation Using Signals of Opportunity," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT]

Amt, J. and J. Raquet, "Flight Testing of a Pseudolite Navigation System on a UAV," *Proceedings of 2007 National Technical Meeting of the Institute of Navigation*, San Diego, CA, Jan 2007. [ANT]

#### VETH, MICHAEL J., Maj,

Veth, M., "Fusing Imaging and Inertial Systems for Passive Navigation", presented at the *NASIC Disruptive Digital Conference*, Dayton, OH, October 2006. [ANT]

Fletcher, J. and Veth, M., “Real-Time Fusion of Image and Inertial Sensors for Navigation”, presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Veth, M. and Pachter, M., “Correspondence Search Mitigation Using Feature Space Anti-Aliasing”, presented at the *2007 ION Annual Meeting*, Cambridge, MA, April 2007. [ANT]

Ebcin, S. and Veth, M., “Tightly-Coupled Image Aided Navigation Using the Unscented Kalman Filter”, presented at the *2007 ION GNSS Meeting*, Ft. Worth, TX, September 2007. [ANT]

#### **6.1.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

##### **RAQUET, JOHN F.,**

Raquet, J. and K. Cook, “Using Two-Way Time Transfer to Improve GPS Positioning Accuracy,” presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT]

Amt, J. and J. Raquet, “High Precision Positioning Using Pseudolites at Non-GPS Frequencies,” presented at 2007 Joint Navigation Conference, Orlando, FL, April 2007. [ANT]

##### **VETH, MICHAEL J., Maj,**

Fletcher, J. and Veth, M., “Real-Time Fusion of Inertial and Imaging Sensors for Navigation”, presented at the *2007 Joint Navigation Conference*, Orlando, FL, April 2007. [ANT]

## **6.2. CENTER FOR DIRECTED ENERGY**

### **Center for Directed Energy [CDE]**

Director 255-3636 x7294

Program Coordinator 255-3636 x4706

Homepage: <http://www.afit.edu/de/>

|              |                                                                             |            |
|--------------|-----------------------------------------------------------------------------|------------|
| <b>6.2.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                      | <b>178</b> |
| <b>6.2.2</b> | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>                                   | <b>179</b> |
| <b>6.2.3</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                 | <b>179</b> |
| <b>6.2.4</b> | <b><u>REFEREED PRESENTATIONS</u></b>                                        | <b>180</b> |
| <b>6.2.5</b> | <b><u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>181</b> |
| <b>6.2.6</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                     | <b>183</b> |

### **6.2.1. FUNDED RESEARCH PROJECTS**

#### **CUSUMANO, SALVATORE J.,**

“2007 Directed Energy Summer Intern Program: Introducing DoD DE to College Undergraduates. Sponsor: HELJTO. Funding: \$38,922. [CDE]

“Airborne Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: \$114,825. [CDE]

“Delivered Irradiance Assessment Tool (DIAT).” Sponsor: DETEC. Funding: \$103,000. [CDE]

“High Energy Laser Modeling and Simulation Program: TAWG Product Development.” Sponsor: AFRL/DE. Funding: \$400,000. [CDE]

#### **FIORINO, STEVEN T., Lt Col,**

“Probabilistic HELEEOS Atmospheric Information for AFRL Weather Impact Analysis.” Sponsor: AFRL/VA. Funding: \$18,467 [CDE]

#### **PERRAM, GLEN P.,**

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: \$89,746. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges.” Sponsor: AFRL/DE. Funding: \$37,500. [CDE]

“Countering the IED Threat with Infrared Signatures.” Sponsor: SAF. Funding: \$100,000. [CMSR]

“Cryo-Cooled Ti-Sapphire Laser to be used in DPAL Experiments.” Sponsor: AFRL/DE. Funding: \$106,464. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: HELJTO. Funding: \$176,450. [CDE]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/DE. Funding \$56,250. [CDE]

“Optical Diagnostics for the Production of Carbon Nanotubes from PLD.” Sponsor: AFOSR. Funding: \$43,205.

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/DE. Funding: \$103,000.

#### **RUSSELL, TIMOTHY H., Maj,**

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: HELJTO. Funding: \$69,300. [CDE]

#### **SCHMIDT, JASON D., Capt,**

“Mitigating Atmospheric Turbulence through Robust Laser Beam Tilt Control.” Sponsor: AFRL/DE. Funding: \$25,000. [CDE]

## 6.2.2. FUNDED EDUCATIONAL PROJECTS

### CUSUMANO, SALVATORE J.,

“2006 Directed Energy Summer Scholars Program, A Companion Program of the AFIT E2S2I Summer Internship Program”. Sponsor: Directed Energy Professional Society Educational Committee. Funding: \$30,000. [CDE]

### PERRAM, GLEN P.,

“High Energy Laser Weapons Systems Short Course.” Sponsor: DEPS Educational Committee. Funding: \$17,500. [CDE]

## 6.2.3. REFEREED JOURNAL PUBLICATIONS

### CUSUMANO, SALVATORE J.,

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, “Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants” *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

### FIORINO, STEVEN T., Lt Col

Fiorino, S.T., R.J. Bartell, M.J. Krizo, and S.J. Cusumano, “Expected Worldwide, Low-Altitude Laser Performance in the Presence of Common Atmospheric Obscurants” *J. Dir Energy*, Vol 2, No. 4, 2007, pp. 363-375, 2007. [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, “Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS” *J. Dir Energy*, Vol 2, No. 4, pp. 347-362, 2007. [CDE]

### MILLER, J. O.,

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. “Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons,” *Journal of Directed Energy*, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

### PERRAM, GLEN P.,

Dolezal, Michael W., and Glen P. Perram, “Predissociation of  $\text{Bi}_2 \text{A}(0_u^+)$ ,  $v'=21-39$ ”, *Journal of Chemical Physics* 126, 084310, 1-6 (Feb 2007). [CDE]

Phelps, Charles, Carl J. Druffner, Glen P. Perram and Rand R. Biggers, “Shock Front Dynamics in the Pulsed Laser Deposition of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ”, *Journal of Physics D: Applied Physics* (2007). [CDE]

Gravley, L.E., S.T. Fiorino, R.J. Bartell, G. P. Perram, M. J. Krizo, and K. B. Le, “Comparison of Climatological Optical Turbulence Profiles to Standard, Statistical, and Numerical Models Using HELEEOS” *J. Dir Energy*, Vol 2, No. 4, pp. 347-362, 2007. [CDE]

### RUSSELL, TIMOTHY H., Maj,

K. C. Brown, T. H. Russell, T. G. Alley, and W. B. Roh, “Passive combination of multiple beams in an optical fiber via stimulated Brillouin scattering,” *Opt. Lett.*, 32, 1047-1049, 2007. [CDE]

N. B. Terry, K. T. Engel, T. G. Alley, and T. H. Russell, "Use of a Continuous Wave Raman Fiber Laser in Graded-Index Multimode Fiber for SRS beam Combination," *Opt. Expr.*, 15, 602-607, 2007. [CDE]

#### **6.2.4. REFEREED PRESENTATIONS**

##### **CUSUMANO, SALVATORE J.,**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T. R.J. Bartell, M.J. Krizo, D.J. Fedyk, K.P. Moore, T.R. Harris, S.J. Cusumano, R. Richmond, and M.J. Gebhardt, "Worldwide Uncertainty Assessments of LADAR Performance for Diverse Low Altitude Atmospheric Environments at 1.064  $\mu\text{m}$  and 1.557  $\mu\text{m}$ ," (Paper AP02) MSS Active E-O Systems, Atlanta, GA, September 2007.[CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

##### **FIORINO, STEVEN T., Lt Col,**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

##### **PERRAM, GLEN P.,**

Fiorino, S.T. R.J. Bartell, M.J. Krizo, G.P. Perram, D.J. Fedyk, K.P. Moore, T.R. Harris, and S.J. Cusumano, "Worldwide Mission Planning Tool for Tactical High Energy Laser Systems Operating at Wavelengths Up to 14  $\mu\text{m}$ ," (Paper AIAA-2007-7569) 5th AIAA Biennial National Forum on Weapon System Effectiveness, Huntsville, AL, October 2007. [CDE]

Essenhight, Katherine and Glen Perram, "2-D Temperature and Pressure Maps by Planar Laser Induced Fluorescence of a Low Pressure Mach 2 Supersonic Nozzle Flow: Comparisons for Different Back Pressures found in Gas Dynamic Lasers" (Paper AIAA-2007-3875) 38th AIAA Plasmadynamics and Lasers Conference, Miami, FL June 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355  $\mu\text{m}$  to 10.6  $\mu\text{m}$ ," (SPIE Paper 6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. [CDE]

Gallagher, Jeffrey E., Glen P. Perram, and Skip Williams, "Ultrasensitive Absorption Measurements of Metastable Species: Pressure Broadening of the  $b^1\Sigma_g \rightarrow a^1\Delta_g$  (1,0) Band in Oxygen Using Off-Axis Integrated-Cavity Output Spectroscopy", 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007. Proceedings of the AIAA, AIAA-2007-1359 (2007). [CDE]

Fiorino, S.T., Richard J. Bartell, Glen P. Perram, Matthew J. Krizo, Daniel J. Fedyk, and Salvatore J. Cusumano "Worldwide Estimates & Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 24 km and Below at Wavelengths 0.355 to 14  $\mu\text{m}$ " SPIE Defense & Security Symposium, Atmospheric Propagation IV, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007).

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives" SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

Hawks, Michael, and Glen P. Perram, "Passive Ranging of Boost Phase Missiles" SPIE Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, Orlando, FL, April 2007. SPIE Proceedings Vol. 6569 (2007). [CDE]

#### **6.2.5. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

##### **CUSUMANO, SALVATORE J.,**

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. 9CDE)

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045  $\mu\text{m}$ , 1.625  $\mu\text{m}$ , and 2.141  $\mu\text{m}$ ," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

**FIORINO, STEVEN T., Lt Col,**

Wisdom, B.W., S.T. Fiorino, R.J. Bartell, M.J. Krizo, and S.J. Cusumano, "Assessment of Optical Turbulence Profiles Derived from Probabilistic Climatology," 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, M.J., J.E. McCrae, and S.J. Cusumano, "Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Atmospheric Scatter," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Uncertainty Assessments of Ship Defense High Energy Laser Performance in Various Worldwide Maritime Environments at Wavelengths of 1.045  $\mu\text{m}$ , 1.625  $\mu\text{m}$ , and 2.141  $\mu\text{m}$ ," DEPS 5th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2007. [CDE]

Bartell, R.J., S.T. Fiorino, G.P. Perram, M.J. Krizo, T.P. Huster, J.P. Cheney, Cusumano S.J., E.P. Magee, M.R. Whiteley, and A. Ngwele "Comparison of Peak Irradiance and Power-in-the-Bucket Predictions Among Several Scaling Law Models and WaveOptics Codes Over Diverse Low Altitude Operating Regimes" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, J.D. Eckel, M.J. Krizo, S.J. Cusumano, "Application and Impacts of Ground-to-Space Cloud Free Line of Sight Probabilities to Air-to-Ground High Energy Laser Engagement Scenarios" Directed Energy Professional Society 9th Annual DE Symposium, Albuquerque, NM 30 Oct - 2 Nov 2006. [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, L.E. Gravley, T.P. Huster, J.P. Cheney, and K.B. Le, "Expected Worldwide Laser Performance in Spectrally Diverse Near Earth Scenarios in the Presence of Common Atmospheric Obscurants" Military Sensing Symposia Active E-O System Symposium, Monterey CA, 26-28 Sep 2006. [CDE]

**MARCINIAK, MICHAEL A.,**

Harkiss, S.I. and M.A. Marciniak, "AFIT's large commercial aircraft infrared signature tool," 2006 Advanced Signatures Technology Symposium, Wright-Patterson AFB OH, 7-9 November 2006. [CDE]

Orth, D.F., M.A. Marciniak, S.J. Cusumano and R.L. Beauchamp, "An infrared camera simulation estimating the signal-to-noise ratio and spatial temperature profile of an ABL-illuminated target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Krizo, M.J., R.J. Bartell, E.P. Magee, S.T. Fiorino, R.L. Beauchamp, M.A. Marciniak, W.F. Bailey and S.J. Cusumano, "High Fidelity Simulation of a Bi-Static Measurement of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Whiteley, M., M.A. Marciniak and S.J. Cusumano, "Algorithm for the Estimation of Delivered Irradiance on Target," 2007 Directed Energy Test & Evaluation Conference, Albuquerque, NM, 7-9 August 2007. [CDE]

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, S.T. Fiorino, M. Whiteley, M.J. Krizo, R.L. Beauchamp, E.P. Magee, R.J. Bartell, K.C. Gross and D.F. Orth, "Delivered Irradiance Assessment Tool," Final Report (2007). [CDE]

**PERRAM, GLEN P.,**

Bartell, Richard, Steven Fiorino, Matthew Krizo, Glen Perram, Todd Huster, Justin Cheney, Eric Magee, Matthew Whiteley, and Amy Ngwele, "Comparison of Peak Irradiance and Power in the Bucket Predictions Among Several Scaling Law Models and Wave Optics Codes Over Diverse Low Altitude Operating Regimes", Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

Essenhig, Katherine and Glen Perram, "Planar Laser Induced Fluorescence for Supersonic Flow Visualization" Ninth Annual Directed Energy Symposium, Albuquerque, NM, Nov 2006. [CDE]

William, Skip, Jeffrey Gallagher and Glen Perram, "Collisional broadening coefficients of singlet ( $a^1\Delta_g$ ) oxygen with helium", 59th Annual Gaseous Electronics Conference, Columbus, OH, Oct 2006. [CDE]

Gross, Kevin C. and Glen P. Perram, "Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification" 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, "Using fireball signatures and phenomenology to distinguish high explosives" 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

**RUSSELL, TIMOTHY H., Maj,**

Terry, N.B., K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Forward and Backward Seeded Continuous-Wave Raman Fiber Amplifiers Based on Multimode Fibers", Presented at Photonics West, 2007. San Jose, California. [CDE]

Terry, N.B., B. Flusche, K. Engel, T. G. Alley, T. H. Russell, and W. B. Roh, "Beam Cleanup and Beam Combination in Raman Fiber Amplifiers and Lasers based on Multimode Fibers", Presented at the Directed Energy Symposium, 2006. Los Angeles, California. [CDE]

## **6.2.6. SUBSTANTIAL CONSULTATIONS**

**FIORINO, STEVEN T., LtCol,**

Fiorino, Steven T., "Cloud Free Line of Sight Analysis" for Dr James Horkovich and Raytheon RMS Systems Engineering, Tucson, AZ, April 2007. [CDE]

Fiorino, Steven T., "Atmospheric Effects on Low-Altitude Laser Performance Analysis" for the National Academy of Science, Board on Army Science and Technology, Washington DC, May - August 2007. [CDE]

**MARCINIAK, MICHAEL A.,**

Cusumano, S.J., M.A. Marciniak, W.F. Bailey, and J.E. McCrae, "Delivered Irradiance Assessment Tool (DIAT)," Directed Energy Test and Evaluation Capability, Oct 2006-Sep 2007. [Center for Directed Energy] [CDE]

Marciniak, M.A., "Infrared optical signature measurement research," Signature Division, Sensors Directorate, Air Force Research Laboratory (AFRL/SNS), Oct 2006-Sep 2007. 9CDE)

Marciniak, M.A., "Infrared counter-countermeasure research," Sensor Materials Branch, Survivability and Sensor Materials Division, Materials and Manufacturing Directorate, AFRL (AFRL/MLPJ), Oct 2006-Sep 2007. [CDE]

### **6.3. CENTER FOR CYBERSPACE RESEARCH**

#### **Center for Cyberspace Research (CCR)**

Director 255-6565 x4278

Executive Program Coordinator 255-3636 x4602

Homepage: <http://www.afit.edu/ccr/>

|              |                                                    |            |
|--------------|----------------------------------------------------|------------|
| <b>6.3.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>             | <b>185</b> |
| <b>6.3.2</b> | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>          | <b>185</b> |
| <b>6.3.3</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>        | <b>185</b> |
| <b>6.3.4</b> | <b><u>REFEREED PRESENTATIONS</u></b>               | <b>188</b> |
| <b>6.3.5</b> | <b><u>OTHER PUBLICATIONS AND PRESENTATIONS</u></b> | <b>193</b> |
| <b>6.3.6</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>            | <b>196</b> |

### **6.3.1. FUNDED RESEARCH PROJECTS**

#### **MILLS, ROBERT F.,**

“Insider Threat Research Laboratory and Ongoing Research of Investigating Methods, Algorithms and Approaches to Reduce the Risk of the Insider Threat Problem.” Sponsor: NSA. Funding: \$10,000. [CCR]

“Technical Support, Information/Cyber Operations: Sensing Applications.” Sponsor: AFIOC/IO. Funding: \$15,000. [CCR]

#### **MULLINS, BARRY E.,**

“Air Force Communications Systems Modeling.” Sponsor: AFCA. Funding: \$64,000. [CCR]

#### **RAINES, RICHARD A.,**

“AFIT Transformation Chair.” Sponsor: SECDEF. Funding: \$166,700. [CCR]

“Target Discovery, Sensor Fusion, and Mitigation Analysis.” Sponsor: AFRL/SN. Funding: \$225,000. [CCR/COA]

#### **WILLIAMS, PAUL D., Maj,**

“AFIT Support for AFRL Cybercraft Project.” Sponsor: AFOSR. Funding: \$40,000.” [CCR]

“Development of an Air Force Cyber Warfare Realistic Training Model.” Sponsor: AFRL/HE. Funding: \$25,000. [CCR]

### **6.3.2. FUNDED EDUCATIONAL PROJECTS**

#### **RAINES, RICHARD A.,**

“Anti-Tamper Software Protection Initiative Education, Outreach, and Research.” Sponsor: AFRL/SN. Funding: \$75,000. [CCR]

“Development of a Federal Cyber Force at the Air Force Institute of Technology.” Sponsor: NSF. Funding: \$510,710. [CCR]

“Tuition and Resource Support for AFIT Center for Information Security Education and Research.” Sponsor: NSA. Funding: \$317,448. [CCR]

### **6.3.3. REFEREED JOURNAL PUBLICATIONS**

#### **BALDWIN, RUSTY O.,**

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, “Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees,” *Journal of Information Warfare*, August 2007, Vol. 6, No. 2, pp. 25-38. [CCR]

V. P. Hubenko, Jr., R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins and M. R. Grimaila, “Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements,” *IEEE Network Special Issue on Advances in Network Systems Architecture*, July/August 2007, pp. 51-56. [CCR]

- G. R. Roelke, R. O. Baldwin, B. E. Mullins and Y. C. Kim, "A Cache Architecture for Extremely Unreliable Nanotechnologies," *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]
- S. D. Bass and R. O. Baldwin, "A Model for Managing Decision-Making Information in the GIG-Enabled Battlespace," *Air & Space Power Journal (ASPJ)*, Summer 2007, Vol. 21, No. 2, pp. 100-108. [CCR]
- G. R. Roelke, R. O. Baldwin, and D. Bulutoglu, "Analytical Models for the Performance of von Neumann Multiplexing," *IEEE Transactions on Nanotechnology*, January 2007, Vol. 6, No. 1, pp. 75-89. [CCR]
- R. O. Baldwin, B. S. Peterson, and R. F. Mills, "Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]
- D. J. Chaboya, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Network Intrusion Detection: Automated and Manual Methods Prone to Attack and Evasion," *IEEE Security and Privacy*, November/December 2006, Vol. 4, No. 6, pp. 36-43. [CCR]
- V. P. Hubenko, R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins, and M. R. Grimaila, "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications Magazine*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

#### **MILLS, ROBERT F.,**

- Roberts, M.L., Temple, M.A., Raines, R.A., Mills, R.F., and Oxley, M.E., "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp. 203-213. [CCR]
- Franz, T.P., Durkin, M., Williams, P.D., Raines, R.A., and Mills, R.F., "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]
- Hubenko, V.P., Raines, R.A., Mills, R.F., Baldwin, R.O., Mullins, B.E., and Grimaila, M.R., "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, Nov 2006, Vol 44, No 11, pp 66-72. [CCR]
- Roberts, M.L., Temple, M.A., Mills, R.F., and Raines, R.A., "Interference Suppression Characterisation for Spectrally Modulated, Spectrally Encoded Signals," *IEE Electronics Letters*, Vol 42, Issue 19, pp 1103-1104. [CCR]
- Baldwin, R.O., Peterson, B.S., and Mills, R.F., "Using Playing Cards to Estimate Interference in Frequency-Hopping Spread Spectrum Radio Networks," *Journal of Systems and Software*, December 2006, Vol. 79, No. 12, pp. 1782-1788. [CCR]

#### **MULLINS, BARRY E.,**

- Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F. and Grimaila, M. R., "Improving Satellite Multicast Security Scalability by Reducing Rekeying Requirements," *IEEE Network*, July/August 2007, Vol. 21, No. 4, pp. 51-56. [CCR]
- Mullins, B. E., Lacey, T. H., Mills, R. F., Trechter, J. M. and Bass, S. D., "How the Cyber Defense Exercise Shaped an Information Assurance Curriculum," *IEEE Security and Privacy*, September/October 2007, Vol. 5, No. 5, pp. 40-49. [CCR]
- Roelke, G. R., Baldwin, R. O., Mullins B. E. and Kim, Y. C., "A Cache Architecture for Extremely Unreliable Nanotechnologies," *IEEE Transactions on Reliability*, June 2007, Vol. 56, No. 2, pp. 182-197. [CCR]

Finnigin, K. M., Mullins, B. E., Raines, R. A. and Potoczny, H. B., "Cryptanalysis of an Elliptic Curve Cryptosystem for Wireless Sensor Networks," *International Journal of Security and Networks (IJSN), Special Issue on Cryptography in Networks*, 2007, Vol. 2, No. 3/4, pp. 260-271. [CCR]

Hubenko, V. P. Raines, R. A., Mills, R. F., Baldwin, R. O., Mullins, B. E. and Grimaila, M. R., "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

#### **OXLEY, MARK E.,**

Roberts, M. L., M. A. Temple, R. A. Raines, R. F. Mills and M. E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework", *IEEE Journal on Selected Topics in Signal Processing* 1, No. 1 (2007), 203-213. [CCR]

#### **PETERSON, GILBERT L.,**

Peterson, G.L., and McBride, B.T., "Importance of Generalizability to Anomaly Detection," *Knowledge and Information Systems*. (electronic publication 24 March 2007, paper in press). [CCR]

Wardell, D.C., and Peterson, G.L., 2007, "Fuzzy State Aggregation and Policy Hill Climbing for Stochastic Environments," *International Journal of Computational Intelligence and Applications*, vol. 6:3, pp. 413-428. [ANT]

Todd, A.D., Benson, J. A., Peterson, G.L., Franz, T. P., Stevens, M. R., and Raines, R.A., 2007, "An Analysis of Forensic Tools in Detecting Rootkits and Hidden Processes." *Advances in Digital Forensics III*, S. Sheno, and P. Craiger, eds., Springer Science+Business Media, New York, NY, pp. 89-106. [CCR]

Rodriguez, B.M., and Peterson, G.L., 2007, "Steganography Detection Using Mutli-Class Classification," *Advances in Digital Forensics III*, eds. Craiger, P., and Sheno, S., Springer Science+Business Media, New York, NY, pp. 193-204. [CCR]

#### **RAINES, RICHARD A.,**

V. P. Hubenko, Jr., R. A. Raines, R. O. Baldwin, B. E. Mullins, R. F. Mills, and M. R. Grimaila, "Improving Satellite Multicast Security Scalability by Reducing Re-keying Requirements," *IEEE Network, Special Issue on Advances in Network Systems Architecture*, July/August 2007, Vol. 21, No. 4, pp. 51-56. [CCR]

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, C. Reuter, R. W. Bennington, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *International Journal of Information Warfare*, (2007) Vol. 6., No. 2, pp. 25-38. [CCR]

T. P. Franz, M. Durkin, P. D. Williams, R. A. Raines, and R. F. Mills, "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

M.L. Roberts, M.A. Temple, R.A. Raines, R.F. Mills and M.E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, June 2007, pp 203-213. [CCR]

K. M. Finnigin, B. E. Mullins, R. A. Raines, and H. B. Potoczny, "Cryptanalysis of an Elliptic Curve Cryptosystem for Wireless Sensor Networks," *International Journal of Security and Networks (IJSN), Special Issue on Cryptography in Networks*, 2007, Vol. 2, No. 3/4, pp. 260-271. [CCR]

J. Lopez, R. A. Raines, M. A. Temple, and R. O. Baldwin, "An Investigation On The Effects Of Emerging 4G Transmissions On 3G Networks," *OMEGA: Special Issue on Telecommunications*, Available online: September 2006, Omega 35 (2007), Vol. 35, pp.706-714. [CCR]

D. J. Chaboya, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Network Intrusion Detection Systems Evasion Techniques and Solutions," *IEEE Security and Privacy* November/December 2006, Vol. 4, No. 6, pp. 36-43. [CCR]

V. P. Hubenko, R. A. Raines, R. F. Mills, R. O. Baldwin, B. E. Mullins, and M. R. Grimaila, "Improving the Global Information Grid's Performance Through Satellite Communications Layer Enhancements," *IEEE Communications*, November 2006, Vol. 44, No. 11, pp. 66-72. [CCR]

#### **TEMPLE, MICHAEL A.,**

M.L. Roberts, M.A. Temple, R.A. Raines, R.F. Mills and M.E. Oxley, "Communication Waveform Design Using an Adaptive Spectrally Modulated, Spectrally Encoded (SMSE) Framework," *IEEE Journal on Selected Topics in Signal Processing*, Vol. 1, No. 1, Jun 2007, pp. 203-213. [CCR]

J. Lopez, Jr., R.A. Raines, M.A. Temple, R.O. Baldwin, and J.P. Stephens, "An Investigation on the Effects of Emerging 4G Transmissions on 3G Networks," *Omega, The International Journal of Management*, Vol. 35, No. 6, Dec 2006, pp. 706-714. [CCR]

#### **WILLIAMS, PAUL D., Maj,**

Paul D. Williams and Eugene H. Spafford; "CuPIDS: An Exploration of Highly Focused, Coprocessor-based Information System Protection," *Computer Networks*; Elsevier; v 51(5); pp. 1284-1298; April 2007. [CCR]

T. P. Franz, M. Durkin, P. D. Williams, R. A. Raines, and R. F. Mills, "Defining IO Forces," *Air and Space Power Journal*, Vol. XXI, No. 2, AFRP 10-1, Summer 2007, pp. 53-66. [CCR]

### **6.3.4. REFEREED PRESENTATIONS**

#### **BALDWIN, RUSTY O.,**

B. D. Birrer, R. A. Raines, R. O. Baldwin, B. E. Mullins, and R. F. Bennington, "Program Fragmentation as a Metamorphic Software Protection," accepted for publication at *The Third International Symposium on Information Assurance and Security*, Manchester, England. [CCR]

A. D. Todd, R. A. Raines, R. O. Baldwin, B. E. Mullins, and S. K. Rogers, "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007, 10<sup>th</sup> International Symposium*, Queensland Australia. [CCR]

G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "An Analysis of Mobility Performance Using Inverted Skip Graphs," accepted for publication at the *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, Philadelphia, PA, August 2007. [CCR]

G. J. Brault, C. J. Augeri, B. E. Mullins, C. B. Mayer, and R. O. Baldwin, "Assessing Standard and Inverted Skip Graphs Using Multi-Dimensional Range Queries and Mobile Nodes," accepted for publication at the *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, Philadelphia, PA, August 2007. [CCR]

D. P. Montminy, R. O. Baldwin, P. D. Williams, and B. E. Mullins, "Using Relocatable Bitstreams for Fault Tolerance," accepted for publication at the *2nd NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007. [CCR]

- G. J. Brault, C. J. Augeri, B. E. Mullins, R. O. Baldwin, and C. B. Mayer, "Enabling Skip Graphs to Process  $k$ -Dimensional Range Queries In A Mobile Sensor Network," accepted for publication at the *6th IEEE International Symposium on Network Computing and Applications* (IEEE NCA07), Cambridge MA, July 2007. [CCR]
- C. J. Augeri, B. E. Mullins, D. A. Bulutoglu, R. O. Baldwin, and L. C. Baird III, "An Analysis of XML Compression and Binary Formats," *1st Workshop on Experimental Computer Science (ExpCS)*, San Diego, California, June 2007, pp. 150.1-150.12. [CCR]
- N. A. Fraser, D. J. Kelly, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," accepted for publication in *IEEE International Conference on Communications (ICC 2007)*, Glasgow, Scotland, 24-28 June 2007, 6 pages (CD). [CCR]
- M. T. Hyland, B. E. Mullins, R. O. Baldwin, and M. A. Temple, "Modeling Geographic Routing Protocols in a Swarm of Unmanned Aerial Vehicles," *IEEE International Symposium on Pervasive Computing and Ad Hoc Communications* (PCAC-07), Niagara Falls, Canada, May 2007, pp. PCAC-113.1-PCAC-113. [CCR]
- C. J. Augeri, B. E. Mullins, L. C. Baird III, D. A. Bulutoglu, and R. O. Baldwin, "Logarithmic Coloring: How Hard is it to Determine Isomorphism?," accepted to the *44th Midwestern Graph Theory Conference* (MIGHTY), Wright State University, Dayton, OH, 11-12 May 2007. [CCR]
- S. D. Mott, S. A. Hart, D. P. Montminy, P. D. Williams, and R. O. Baldwin, "A Hardware-based Architecture to Support Flexible Real-Time Parallel Intrusion Detection," *2007 IEEE International Conference on System of Systems Engineering (SoSE) San Antonio, Texas*, April 2007, pp. TBD. [CCR]
- C. R. Mann, R. O. Baldwin, and B. E. Mullins, "Wireless Sensor Networks: Guidelines for Development and a Survey of Current Research," *Proceedings of the 10th Communication and Networking Simulation Symposium* (CNS '07), Norfolk, VA, March 2007, pp. 41-50. [CCR]
- C. J. Augeri, B. E. Mullins, L. C. Baird, D. A. Bulutoglu, and R. O. Baldwin, "IsoCanon: An Algorithm for Determining Isomorphism," *38th Southeastern International Conference on Combinatorics, Graph Theory, and Computing* (SEICCGTC), Boca Raton, FL, March 2007, pp. TBD. [CCR]
- K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. E. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *Proceedings of the International Conference on Information Warfare and Security* (ICIW 2007), Monterey, CA, March 2007, pp. 47-56. [CCR]
- K. S. Edge, R. A. Raines, M. R. Grimaila, R. O. Baldwin, R. W. Bennington, and C. E. Reuter, "The Use of Attack and Protection Trees to Analyze Security for an Online Banking System," *The Proceedings of the 40th Hawaii International Conference on System Sciences (HICSS-40)* (CDROM), Waikoloa HI, January 2007, 8 pages. [CCR]
- G. L. Peterson, R. A. Raines, and R. O. Baldwin, "Graduate Digital Forensics Education at the Air Force Institute of Technology," *The Proceedings of the 40th Hawaii International Conference on System Sciences (HICSS-40)* (CDROM), Waikoloa HI, January 2007, 8 pages. [CCR]
- J. T. Kautz, B. E. Mullins, R. O. Baldwin, and S. R. Graham, "An Adaptable Energy-Efficient Medium Access Control Protocol for Wireless Sensor Networks," *The Proceedings of Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-6. [CCR]
- D. D. Hodson, R. O. Baldwin, and J. G. Weber, "Hardware-Assisted Real-time Simulation," *Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL, December 2006, pp. 2624.1-2624.8. [CCR]

D. D. Hodson, D. P. Gehl, and R. O. Baldwin, "Building Distributed Simulations Utilizing the EAAGLES Framework," *Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL, December 2006, pp. 2628.1-2628.10. [CCR]

**HOPKINSON, KENNETH M.,**

Shaw, A.K., Mills, R.F., Mullins, B.E., Hopkinson, K.M., "A Multilayer Graph Approach to Correlating Network events with Operational Mission Impact," *Proceedings of the 75th MORS Symposium*, 12-14 June, 2007, Annapolis, Maryland, USA. [CCR]

**MILLS, ROBERT F.,**

Beard, T.W., Temple, M.A., Miller, J.O., Mills, R.F., and Raquet, J.F., "Using Genetic Algorithms for SMSE Waveform Design," *IEEE Int'l Waveform Diversity & Design Conf (WDD 2007)*, Pisa, Italy, Jun 2007. [CCR]

Wong-Jiru, A., Colombi, J., Suzuki, L., and Mills, R., "Graph Theoretical Analysis of Network Centric Operations Using Multi-Layer Models," *5th Annual Conference on Systems Engineering Research*, Hoboken, New Jersey, March 14-16, 2007. [CSE] [CCR]

Mullins, B.E., Lacey, T.H., Mills, R.F., Trechter, J.M., Bass, S.D., "The Impact of the NSA Cyber Defense Exercise on the Curriculum at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-9. [CCR]

Levoy, T.E., Grimaila, M.R., and Mills, R.F., "A Methodology For Customizing Security Auditing Templates For Malicious Insider Detection," *8th International Symposium on System and Information Security*, Nov 2006. (40 of 140) [CCR]

Rehm, C.R., Temple, M.A., Mills, R.F., and Raines, R.A., "Entropy-Based Spectral Processing on the 802.11a Waveform," *2006 Military Communications Conf (MILCOM 2006)*, Oct 2006. [CCR]

Bass, S., Mills, R. and Seetharaman, G., "Challenges of Information Management in the Networked Battlespace," *Proceedings of the Second International Conference on Innovative and Commercial Applications of Distributed Sensor Networks*, Crystal City, VA, Oct 16-17 2006. [CCR]

**MULLINS, BARRY E.,**

Todd, A. D., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Rogers, S. K., "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007, 10<sup>th</sup> International Symposium*, 5-7 September 2007, Queensland Australia. [CCR]

Birrer, B. D., Raines, R. A., Baldwin, R. O., Mullins, B. E. and Bennington, R. F., "Program Fragmentation as a Metamorphic Software Protection," *The Third International Symposium on Information Assurance and Security*, Manchester, United Kingdom, 29-31 August 2007, pp. 369-374. [CCR]

Montminy, D. P., Baldwin, R. O., Williams, P. D. and Mullins, B. E., "Using Relocatable Bitstreams for Fault Tolerance," *NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007, pp. 701-708. [CCR]

Brault, G. J., Augeri, C. J., Mullins, B. E., Mayer, C. B. and Baldwin, R. O., "Assessing Standard and Inverted Skip Graphs Using Multi-Dimensional Range Queries and Mobile Nodes," *4th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MOBIQUITOUS 2007)*, August 2007, Philadelphia PA. [CCR]

- Brault, G. J., Augeri, C. J., Mullins, B. E., Baldwin, R. O. and Mayer, C. B., "Enabling Skip Graphs to Process k-Dimensional Range Queries In A Mobile Sensor Network," *6th IEEE International Symposium on Network Computing and Applications (IEEE NCA07)*, Cambridge MA, July 2007, pp. 273-282. [CCR]
- Fraser, N. A., Kelly, D. J., Raines, R. A., Baldwin, R. O. and Mullins, B. E., "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," *2007 IEEE International Communications Conference*, Glasgow Scotland, June 2007, pp. 1-6. [CCR]
- Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "An Analysis of XML Compression Efficiency," *Workshop on Experimental Computer Science*, San Diego CA, 13-14 Jun 2007, pp. 1-12. [CCR]
- Shaw, A. K., Mills, R. F., Mullins, B. E. and Hopkinson, K. M., "A Multilayer Graph Approach to Correlating Network Events with Operational Mission Impact," *75<sup>th</sup> Military Operations Research Society Symposium (MORSS)*, Annapolis MD, June 2007. [CCR]
- Hyland, M. T., Mullins, B. E., Baldwin, R. O. and Temple, M. A., "Modeling Geographic Routing Protocols in a Swarm of Unmanned Aerial Vehicles," *IEEE International Symposium on Pervasive Computing and Ad Hoc Communications (PCAC-07)*, Niagara Falls, Canada, May 2007, pp. 249-256. [CCR]
- Seyba, J. R., Mullins, B. E. and Bonafede, G. L., "Audio-Video Capacity of an IEEE 802.11g Wireless LAN," *2007 International Symposium on Collaborative Technologies and Systems (CTS 2007)*, Orlando FL, May 2007, pp 372-378. [CCR]
- Mullins, B. E., Lacey, T. H., Mills, R. F. and Raines, R. A., "The Morphing of a Cyber Operations Curriculum at AFIT," *INewsletter - The Newsletter for Information Assurance Technology Professionals*, Information Assurance Technology Analysis Center, Falls Church, VA, Vol. 10, No. 1, Spring 2007, pp. 26-30. [CCR]
- Mann, C., Baldwin, R. O. and Mullins, B. E., "Wireless Sensor Networks: Guidelines for Development and a Survey of Current Research," *accepted for publication in the 10th Communication and Networking Simulation Symposium (CNS '07)*, Norfolk, VA, March 2007, pp. 41-50. [CCR]
- Mullins, B. E., Lacey, T. H., Mills, R. F., Trechter, J. M. and Bass, S. D., "The Impact of the NSA Cyber Defense Exercise on the Curriculum at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-9. [CCR]
- Kautz, J. T., Mullins, B. E., Baldwin, R. O. Graham, S. R., "An Adaptable Energy-Efficient Medium Access Control Protocol for Wireless Sensor Networks," *Hawaii International Conference on System Sciences (HICSS-40)*, Waikoloa HI, January 2007, pp. 1-6. [CCR]
- Augeri, C. J., Morris, K. M. and Mullins, B. E., "HARVEST: A Framework and Co-Simulation Environment for Analyzing Unmanned Aerial Vehicle Swarms," *IEEE Military Communications Conference (MILCOM 2006)*, Washington DC, October 2006, pp. 1-7. [CCR]

#### **PETERSON, GILBERT L.,**

- Woolley, B. and Peterson, G.L., Genetic Evolution of Hierarchical Behavior Structure, *GECCO 2007*, London, July 2007. (accepted March 2007). [ANT]
- Haag, C., Lamont, G.B., Williams, P., and Peterson, G.L., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed Computer Network Intrusions," *Workshop on Defense Application of Computation Intelligence at GECCO 2007*, London, July 2007. (accepted February 2007). [CCR]

Haag, C., Lamont, G.B., Peterson, G.L., and Williams, P., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed computer Network Intrusions," *ICARIS 2007*, (accepted May 2007). [CCR]

Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Multi-Class Classification Averaging Fusion for Detecting Steganography," *2007 IEEE International Conference on System of Systems Engineering*, San Antonio, TX, April 16-17, 2007, pp 309-314. [CCR]

Peterson, G.L., Raines, R.A., and Baldwin, R.O., "Graduate Digital Forensics Education at the Air Force Institute of Technology," *Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, pp. 264-270. [CCR]

Rodriguez, B.M., Peterson, G.L., Bauer, K.B., and Agaian, S.S., 2006, "Steganalysis Embedding Percentage Determination with Learning Vector Quantization," *2006 IEEE International Conference on Systems Man and Cybernetics*. October 8-11, 2006, Taipei, Taiwan, pp. 1956-1961. [CCR]

### **RAINES, RICHARD A.,**

A. D. Todd, R. A. Raines, R. O. Baldwin, B. E. Mullins, and S. K. Rogers, "Network Intrusion Detection Evasion Through Server Response Forging," *Recent Advances in Intrusion Detection (RAID) 2007, 10<sup>th</sup> International Symposium*, Queensland Australia September 2007, 13 pp (CD). [CCR]

B. D. Birrer, R. A. Raines, R. O. Baldwin, B. E. Mullins, and R. W. Bennington, "Program Fragmentation as a Metamorphic Software Protection," *The Third International Symposium on Information Assurance and Security*, Manchester, England, August 2007, pp. 369-374. [CCR]

N. A. Fraser, D. J. Kelly, R. A. Raines, R. O. Baldwin, and B. E. Mullins, "Using Client Puzzles to Mitigate Distributed Denial of Service Attacks in the Tor Anonymous Routing Environment," *2007 IEEE International Communications Conference*, Glasgow Scotland, June 2007, 6 pages (CD). [CCR]

K. S. Edge, R. A. Raines, R. O. Baldwin, M. R. Grimaila, R. W. Bennington, and C. Reuter, "Analyzing Security Measures for Mobile Ad Hoc Networks Using Attack and Protection Trees," *The International Conference on Information Warfare and Security*, Monterey, CA, March 2007, pp. 47-56. [CCR]

T. S. Smith, P. L. Woolley, R. F. Mills, and R. A. Raines, "A Framework for Relating Cyberspace Operations to the Cognitive and Physical Domains," *The International Conference on Information Warfare and Security*, March 2007, pp. 217-224. [CCR]

A. D. Todd, J. A. Benson, G. L. Peterson, T. P. Franz, M. R. Stevens, and R. A. Raines, "An Analysis of Forensic Tools in Detecting Rootkits and Hidden Processes," *the Third IFIP WG 11.9 International Conference on Digital Forensics*, January 2007, 8 pages (CD). [CCR]

K. S. Edge, R. A. Raines, R. O. Baldwin, M. A. Grimaila, and R. Bennington, "The Use of Attack and Protection Trees to Analyze Security for an Online Banking System," *the Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, 8 pages (CD). [CCR]

G. L. Peterson, R. A. Raines, and R. O. Baldwin "Graduate Digital Forensics Education at the Air Force Institute of Technology," *the Hawaii International Conference on System Sciences-HICSS-40*, Kauai, Hawaii, January 2007, 8 pages (CD). [CCR]

K. S. Edge, G. S. Dalton, R. A. Raines, and R. F. Mills, "Using Attack and Protection Trees to Analyze Threats and Defenses to Homeland Security," *The 2006 Military Communications Conference (MILCOM)*, Washington DC, October 2006, 7 pages (CD). [CCR]

C. R. Rehm, M. A. Temple, R. A. Raines, and R. F. Mills, "Entropy-based Spectral Processing on the IEEE 802.11a OFDM Waveform," accepted for presentation and publication in the *2006 IEEE Military Communications Conference (MILCOM)*, Washington DC, October 2006, 5 pages (CD). [CCR]

**WILLIAMS, PAUL D., Maj,**

Stevens, Michael, Williams, Paul D., "Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors," *Computational Intelligence in Security and Defense Applications*, 2007. CISDA 2007. IEEE Symposium on, Honolulu, HI, USA, April 2007, pp. 193-200. [CCR]

Stephen Mott, Samuel Hart, David Montminy, Paul Williams, Rusty Baldwin, "A Hardware-based Architecture to Support Flexible Real-Time Parallel Intrusion Detection," *Proc. 2007 IEEE International Conference on System of Systems Engineering (SoSE)*, 2007. [CCR]

D. P. Montminy, R. O. Baldwin, P. D. Williams, and B. E. Mullins, "Using Relocatable Bitstreams for Fault Tolerance," accepted for publication at the *2nd NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2007)*, University of Edinburgh, Scotland, August 2007. [CCR]

Haag, C., Lamont, G.B., Williams, P., and Peterson, G.L., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed Computer Network Intrusions," *Workshop on Defense Application of Computation Intelligence at GECCO 2007*, London, July 2007. (accepted February 2007). [CCR]

Haag, C., Lamont, G.B., Peterson, G.L., and Williams, P., "An Artificial Immune System-Inspired Multiobjective Evolutionary Algorithm with Application to the Detection of Distributed computer Network Intrusions," *ICARIS 2007*, (accepted May 2007). [CCR]

### **6.3.5. OTHER PUBLICATIONS AND PRESENTATIONS**

**KURKOWSKI, STUART H., LtCol,**

Kurkowski, Stuart H., "Toolkit for Visualizing Situation Scope," *Cyber Defense Conference*, Rome, NY. May 22, 2007 [CCR].

**MILLS, ROBERT F.,**

Shaw, A., Mills, R.F., Mullins, B.E., and Hopkinson, K.M., "A Multilayer Graph Approach to Correlating Network Events with Operational Mission Impact," *75th Military Operations Research Society Symposium (MORSS)*, Annapolis MD, 12-14 June 2007. [CCR]

Mills, R.F., "Information Operations and Cyberspace", Air Education and Training Command Symposium, San Antonio, TX, 5-7 Sep 2007. [CCR]

Mills, R.F., Lacey, T.H., and Grimaldi, M.R., "A Framework for Cyberspace Situational Awareness", Cyber Defense Conference, Griffiss Institute, Rome NY, 22-24 May 2007. [CCR]

Mills, R.F., "Trends in Communications/Radar Technologies: Challenges for the Intelligence Community" to National Air and Space Intelligence Center (NASIC) Workshop on Disruptive

Lacey, T., Mills, R., Mullins, B., and Raines, R., "The Morphing of a Cyber Operations Curriculum at AFIT", *IANewsletter, Information Assurance Technology Analysis Center*, Vol 10, Number 1, Spring 2007, pp 26-30. [CCR]

Wieser, T.L., Miller, G.J., Piepkorn, A., Kennedy, J., Mills, R.F., and Colombi, J.M., "Heuristics for Joint Architecting," *Defense AT&L Magazine*, Nov-Dec 2006, pp 44-48. [CSE]

Jones, C.O., Mills, R.F., and Raines, R.A., "Removing Security through Obscurity from Software Watermarking," *IANewsletter*, Information Assurance Technology Analysis Center, Vol 9, Number 2, Fall 2006, pp 14-17. [CCR]

**MULLINS, BARRY E.,**

Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A. and Baldwin, R. O., "Determining a Canonical Graph Isomorph Using Lexicographic Sorting," presented at the *Discrete Mathematics Seminar*, Department of Mathematics, Wright State University, Dayton, OH, 25 April 2007.

Lacey, T., Mills, R., Mullins, B., and Raines, R., "The Morphing of a Cyber Operations Curriculum at AFIT", *IANewsletter*, *Information Assurance Technology Analysis Center*, Vol 10, Number 1, Spring 2007, pp 26-30. [CCR]

**PETERSON, GILBERT L.,**

Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Steganography Anomaly Detection Using Simple One Class Classification," In *Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 9-13 April 2007, pp. 6579015.1-6579015.6. [CCR]

Rodriguez, B.M., Peterson, G.L., and Agaian, S.S., "Steganalysis Feature Improvement Using Expectation Maximization," In *Mobile Multimedia/Image Processing for Military and Security Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, 9-13 April 2007, pp. 6575030.1-6575030.6. [CCR]

Karrels, D., Peterson, G.L., and Williams, P., "Architecture for Deploying Lightweight Cybercraft," presented at the Cyber Defense Workshop, Rome, NY, April 2007. [CCR]

**RAINES, RICHARD A.,**

Cyberwarrior Training in Progress," *Defense Systems* interview, Sept/October 2007, pp. 12-16.

"Cyberspace Challenges: Present and Future," presented at the *AETC Symposium*, San Antonio, Texas, 6-7 September 2007.

"Education Opportunities Expand with Cyber Command," Air Force Times interview, July 16, 2007.

"Air Force Cyber Education," presented at the *Cyber Academics Thought Leadership Forum*, Omaha, Nebraska, June 2007.

"Cyber Threats and Challenges," 30 minute radio discussion presented on Clear Channel Radio, FM 93.3, Dayton, Ohio, May 20, 2007

"Cyber Threats, Challenges, and Future Technologies," presented at the *Future Technologies for the Warfighter Workshop*, Air Command and Staff College, Montgomery AL, April 2007.

"The Center for Cyberspace Research," presented to Mr. Michael J. Wynne, Secretary of the Air Force, Wright Patterson AFB OH, March 2007.

**WILLIAMS, PAUL D., Maj,**

Stephen Mott, Paul Williams, "Creating Hardware-based Primitives That Facilitate the Exposure of State Information Useful for Security Related Monitoring," *Proceedings of the 2007 International Conference on Information Warfare and Security*; Naval Postgraduate School, Monterey, CA; Mar. 8-9, 2007. [CCR]

Maj Paul Williams, Dr. Rick Raines, Dr Bob Mills, Dr. Mike Temple, Dr. Mike Grimaldi, Dr. Barry Mullins, NSA LTS invited talk “Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring,” Aug 07, [CCR]

Maj Paul Williams, Invited Talk to Intel Corporation, “Security Focused Computing Architectures: Hardware Primitives for Runtime Security Monitoring,” Aug 07 [CCR]

Maj Paul Williams, AFOSR Software and Systems and Security Program Review, Invited Talk, “CyberCraft Support,” Syracuse NY, June 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Invited talk at USSTRATCOM/Omaha Chamber of Commerce, “USAF Needs for Cyber Education,” June 07, [CCR/ENG/HAF]

Maj Paul Williams, Mr. Al-Nat Tuting, AFRL/IF Cyber Defense Conference, Invited Talk, “Computing Architectures for Better Security,” Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, “Air Force Cyber Education Summit Overview,” Rome, NY, May 07 [CCR]

Maj Andy Hansen, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, “Realistic Training in Cyberspace,” Rome, NY, May 07 [CCR]

Lt Rich Dill, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, “Built-in ‘Seeds of Destruction,” Rome, NY, May 07 [CCR]

Maj Mike Mendenhall, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, “Cyber Kill Chain,” Rome, NY, May 07 [CCR]

Lt Dan Karrels, Dr. Bert Peterson, Maj Paul Williams, AFRL/IF Cyber Defense Conference, Invited Talk, “Architecture for Deploying Lightweight CyberCraft,” Rome, NY, May 07 [CCR]

Maj Paul Williams, AFRL/IF, CyberCraft Workshop, Invited Talk, “Use of Trust Vectors for CyberCraft and the Limits of Usable Data History for Trust Vectors,” Colorado Springs, CO, Apr 07 [CCR]

Maj Paul Williams, Dr. Rick Raines, Presentation to SECAF, “AFIT’s Contributions to Cyber Warfare Briefing,” AFIT, Mar 07 [CCR/ENG]

Maj Paul Williams, Dr. Bob Mills, Dean Thomas, “USAF Scientific Advisory Board for Cyber Defense,” 8AF, Barksdale, LA, Feb 07 [CCR]

Maj Williams, Paul D., Dr. Rick Raines, Dr. Bob Mills, Consultations at AU about how to best incorporate cyber warfare into AU PME, Jan 07 [CCR]

Maj Williams, Paul D., Dr. Robert Mills, Short course, “Introduction to Cyber Warfare,” Lackland AFB, TX, Nov 06 [CCR] Maj Paul Williams, NSA Cyber Defense Workshop, “CuPIDS: Parallel-based Security Architectures”, Dec 06 [CCR]

Maj Paul Williams, Dr. Rick Raines, “AFIT/AFRL Research Relationship Building,” Rome NY, Oct 06 [CCR]

### **6.3.6. SUBSTANTIAL CONSULTATIONS**

#### **MILLS, ROBERT F.,**

Mills, R.F., Raines, R.A., Hopkinson, K.M., Grimaila, M.R., and Baldwin, R.O., “Technical Support, Information/Cyber Operations,” Air Force Information Operations Center, Nov 2006-Sep 2007. [CCR]

Mills, R.F., and Peterson, G.L., “Insider Threat Research,” National Security Agency, Oct 2006-Sep 2007. [CCR]

#### **MULLINS, BARRY E.,**

Mullins, B. E., “AF Communication Systems Modeling,” Air Force Communications Agency, April 2007 – September 2007. [CCR]

Mullins, B. E., Baldwin, R. O. and Temple, M. A., “Technical Support: Ground Mobile Objective Gateways (GMOG),” Air Force Research Lab – Munitions Directorate, June 2006 – September 2007. [CCR]

#### **WILLIAMS, PAUL D., Maj,**

Williams, Paul D., “Cyber Force Development--Cyber Education and Training,” By-name designee to develop the knowledge, skills, and ability training requirements for the future cyber warfare forces, supported HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007. [CCR]

Mills, Robert F. and Williams, Paul D., “Cyber Force Development--Cyber PME”, supported Dr. Mills in developing the cyber warfare doctrine and material required for PME for all Airmen, supported AU, HQ AF, 8AF, AFCYBER, NSA, Oct 2006-Oct 2007. [CCR]

## **6.4. CENTER FOR MASINT STUDIES AND RESEARCH**

### **Center for MASINT Studies and Research [CMSR]**

Chair 255-3636 x4536

Executive Program Coordinator 255-7287

FAX 656-6000

Homepage: <http://www.afit.edu/cmsr/>

|              |                                                                             |            |
|--------------|-----------------------------------------------------------------------------|------------|
| <b>6.4.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                      | <b>198</b> |
| <b>6.4.2</b> | <b><u>FUNDED EDUCATIONAL PROJECTS</u></b>                                   | <b>198</b> |
| <b>6.4.3</b> | <b><u>REFEREED PRESENTATIONS</u></b>                                        | <b>198</b> |
| <b>6.4.4</b> | <b><u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>198</b> |

#### **6.4.1. FUNDED RESEARCH PROJECTS**

##### **PETROSKY, JAMES C.,**

“Analysis of Residual Memory Effects in Military Memory Systems.” Sponsor: AFRL/SN. Funding: \$32,240. [CMSR]

##### **TUTTLE, RONALD F.,**

“Establishing an Expert-Defined Protocol for Analytical Tradecraft with Career Specialization in Denail and Deception.” Sponsor: NASIC. Funding: \$75,000. [CMSR]

“JWICS Connectivity Support.” Sponsor: NASIC. Funding: \$50,000. [CMSR]

#### **6.4.2. FUNDED EDUCATIONAL PROJECTS**

##### **TUTTLE, RONALD F.,**

“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: \$510,000. [CMSR]

“MASINT Academic Support.” Sponsor: AFRL/SN. Funding: \$100,000. [CMSR]

#### **6.4.3. REFEREED PRESENTATIONS**

##### **BOHN, MATTHEW J., LtCol,**

Bohn, M.J. and M.A. Lundin, “Remote Sensing phase fluorimetry using a mercury vapor lamp,” Proceedings of SPIE, Vol 6555, 27 Apr 2007. [CMSR]

##### **PERRAM, GLEN P.,**

Gross, Kevin C., Joseph Wymann, and Glen P. Perram, “Phenomenological Fireball Model for Remote Identification of High-Explosives” SPIE Defense & Security Symposium, Orlando, FL, April 2007. SPIE Proceedings Vol. 6551 (2007) [CMSR]

#### **6.4.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

##### **BOHN, MATTHEW J., LtCol,**

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, 18 -20 Sep 2007, NPS, Monterey, CA [CMSR]

Bohn, M.J. and M.A. Lundin, "Passive Remote Sensing of Uranyl Compounds," Advanced Signatures Technology Symposium, AFIT, Nov 2006. [CMSR]

##### **PERRAM, GLEN P.**

Gross, Kevin C. and Glen P. Perram, “Developing a Phenomenological Model of Infrared Emissions from Detonation Fireballs for Explosive Identification” 8th Workshop on Infrared Remote Sensing Applications, Mont Sainte-Anne, Quebec, Canada, Oct 2006. [CMSR]

Gross, Kevin C., Glen P. Perram, Ronald F. Tuttle, “Using fireball signatures and phenomenology to distinguish high explosives” 2nd Annual Advanced Signatures Technology Symposium, Air Force Institute of Technology, Wright Patterson Air Force Base, OH, 7-9 Nov 2006. [CMSR]

## **6.5. CENTER FOR OPERATIONAL ANALYSIS**

### **Center for Operational Analysis (COA)**

Director 255-6565 x4326

Projects Director 255-6565 x4251

Homepage: <http://www.afit.edu/coa/>

|              |                                                                             |            |
|--------------|-----------------------------------------------------------------------------|------------|
| <b>6.5.1</b> | <b><u>FUNDED RESEARCH PROJECTS</u></b>                                      | <b>200</b> |
| <b>6.5.2</b> | <b><u>REFEREED JOURNAL PUBLICATIONS</u></b>                                 | <b>200</b> |
| <b>6.5.3</b> | <b><u>REFEREED PRESENTATIONS</u></b>                                        | <b>201</b> |
| <b>6.5.4</b> | <b><u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u></b> | <b>203</b> |
| <b>6.5.5</b> | <b><u>SUBSTANTIAL CONSULTATIONS</u></b>                                     | <b>204</b> |
| <b>6.5.6</b> | <b><u>BOOKS AND CHAPTERS IN BOOKS</u></b>                                   | <b>205</b> |

### **6.5.1. FUNDED RESEARCH PROJECTS**

#### **BAUER, KENNETH W. Jr.,**

“Sensor Fusion for Automatic Target Recognition.” Sponsor: AFOSR. Funding: \$51,390. [COA]

“Sensor Fusion for Automatic Target Recognition.” Sponsor: ACC. Funding: \$32,000. [COA]

#### **DECKRO, RICHARD F.,**

“AFIT/ENS and AFRL/HE Human Effectiveness Directorate MOA.” Sponsor: AFRL/HE. Funding: \$25,000. [COA]

#### **JOHNSON, ALAN W.,**

“Reusable Space Vehicle Ground Operations.” Sponsor: AFRL/VA. Funding: \$35,000. [COA]

#### **MELOUK, SHARIF H.,**

“AFIT Modeling and Simulation Support for Air Vehicles Directorate.” Sponsor: AFRL/VA. Funding: \$30,015. [COA]

#### **MILLER, JOHN O.,**

“Air Force Standard Analysis Toolkit (AFSAT) Support.” Sponsor: SAF. Funding: \$65,000. [COA]

#### **MOORE, JAMES T.,**

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: \$50,000. [COA]

### **6.5.2. REFEREED JOURNAL PUBLICATIONS**

#### **BAUER, KENNETH W. Jr.,**

Bednar, E.M., Bauer, K.W., and J.O. Miller, “Use of Control Variates in a Large-Scale Aggregated Combat Model”, Journal of Defense Modeling and Simulation, Vol 4, Number 1, Jan 2007, pages 29 - 41. [COA]

Clutz, T. C., Bauer, K. W., and M. E. Oxley, “Fault Detection Subsystem Optimization”, Journal of Operations and Logistics, Issue 1, Volume 1, 2006. [COA]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E., “Multivariate Analysis of a Simulated Prognostics and Health Management System”, International Journal of Logistics: Research and Applications, Vol. 10, No.1, March 2007, 1-10. [COA]

#### **JOHNSON, ALAN W.,**

Moore, T., Johnson, A., Rehg, M., and Hicks, M., 2007, “Quality Assurance Staffing Impacts in Military Aircraft Maintenance Units”, Journal of Quality in Maintenance Engineering 13(1): 33-48. [COA]

Ford, C., J. Howe, A. Johnson, and J. Bell, 2006, “Automatic Test Systems: Unique versus Common Management”, Defense Acquisition Review Journal Dec 06-Mar 07: 170-185. [COA]

**MILLER, J. O.,**

Bednar, Earl M., Bauer, K.W. Jr, and Miller, J.O. "Use of Control Variates in a Large-Scale Aggregated Combat Model," The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology, Vol 4 No. 1, pp. 29-41, January 2007. [COA]

Long, Scott N., Miller, J.O., Brigantic, R.T., and Goda, M.E. "Using Defocus to Improve Peak Irradiance for Air-to-Ground High-Energy Chemical-Oxygen Iodine Laser (COIL) Weapons," Journal of Directed Energy, Vol 2, pp. 189-209, Spring 2007. [COA and CDE]

Miller, J.O., Bauer, K.W. Jr., Faas, P., Pawling, C.R., and Sterling, S.E. "Multivariate Analysis of a Simulated Prognostics and Health Management System," International Journal of Logistics: Research and Applications, Volume 10, No. 1, pp. 1-10, Mar 2007. [COA]

**WEIR, JEFFERY D., Lt Col,**

Bullock, R. K., R. F. Deckro, and J. D. Weir, "Methodology for Competitive Strategy Development", forthcoming in Computers & Operations Research (Available online 13 November 2006). [COA]

Braziel, C., Thal, A.E. and Weir, J.D., "Evaluating the Effectiveness of Utility Privatization Efforts", Journal of Facility Management 5:2, pp 86 - 102 (2007). [COA]

**6.5.3. REFEREED PRESENTATIONS**

**BAUER, KENNETH W. Jr.,**

Smetek, T.E., K.W. Bauer, "Finding Hyperspectral Anomalies Using Multivariate Outlier Detection," Proceedings of the 2007 IEEE Aerospace Conference, March 2007. [COA]

Friend, M. A. and K.W. Bauer, "ROC Trajectory Measures for Classifier Accuracy and Robustness," Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006), Editors: C. Dagli, D. Enke, A. Buczak, M. Embrechts, O. Ersoy, , St. Louis, MO, 5-8 November 2006. [COA]

**JOHNSON, ALAN W.,**

Cole, G. and Johnson, A.W., "Logistics Composite Model Variance Reduction". INFORMS National Meeting, Pittsburgh, November 4-8 2006. [COA]

Jackson, W., Cunningham, W., and Johnson, A., "Pure Pallet Program Viability for Military Retrograde Shipments", POM 18<sup>th</sup> Annual Conference, Dallas, May 4-7 2007. [COA]

Michalski, S. and Johnson, A.W., "Ground Support Staffing for Reusable Launch Vehicle Generation." 42<sup>nd</sup> Annual SOLE International Logistics Conference and Exhibition, 19-23 August 2007, Pittsburgh. [COA]

Michalski, S. and Johnson, A.W., "Logistics Personnel Requirements for Ground Support of a Reusable Military Launch Vehicle", Proceedings of the American Institute of Aeronautics and Astronautics Space 2007 Conference, Long Beach CA, AIAA-2007-6273. [COA]

Michalski, S. and Johnson, A.W., "Manpower Requirements for Reusable Military Launch Vehicle Regeneration", 75<sup>th</sup> MORS Symposium, Annapolis, 12-14 June 2007. [COA]

**KNIGHTON, SHANE A., Maj,**

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", INFORMS International, Puerto Rico, July 2007. [COA]

Knighton, Shane. "Network Flow Model for Optimizong Fighter Squadron Selection", Royal Military Academy, Kingston, Ontario, June 07. [COA]

Capt. Jennifer L Geffre, Dr Richard F Deckro and Maj. Shane Knighton, USAF, "Risk Analysis: Critical Components in Terrorist Attacks", Presented in WG 8, 75th Military Operations Research Society Symposium, June 2007. [COA]

Gentil, Kathy and Shane A. Knighton, "Developing Advanced Academic Degree Educational Profiles for Career Fields", Decision Analysis Affinity Group, Stanford, CA, March 07. [COA]

**MELOUK, SHARIF H.,**

Melouk, S. and P. Damodaran. (2007), "Analysis of the Passenger Security Screening Process using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S. and K. Cavallaro (2007), "Analyzing the Interdiction of Sea-Borne Threats Using Simulation Optimization". Proceedings of the Sixteenth Industrial Engineering Research Conference, Nashville, TN, May 19-23. [COA]

Melouk, S., M. Perry, and M. Carras. (2006). BDA Enhancement Methodology using Situational Parameter Adjustments. INFORMS Conference, Pittsburgh, PA. November 5-8. [COA]

**MILLER, J. O.,**

Honabarger, Jason B. and Miller, J.O. "Modeling and Measuring Network Centric Warfare (NCW) With the System Effectiveness Analysis Simulation (SEAS)," 11<sup>th</sup> International Command and Control Research Technology Symposium, Cambridge, UK, 26-28 Sep 2006. [COA]

**MOORE, JAMES T.,**

Burks, Robert E. and James T. Moore, "Solving the Theater Distribution Problem with Tabu Search, Military Operations Research Society Symposium, Annapolis, MD, 12-14 Jun 2007. [COA]

Moore, James T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Arlington, VA 7-9 May 2007. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the LPDLTW with a Theater Distribution Application", Institute for Operations Research and the Management Sciences (INFORMS) Conference, Pittsburgh, PA, 5-8 Nov 2006. [COA]

Burks, Robert E. and James T. Moore, "An Adaptive Tabu Search Heuristic for the Theater Distribution Problem", Air Force Operations Research Society Symposium, Albuquerque, NM, 18-20 Oct 2006. [COA]

**ZALEWSKI, DANIEL J., Col,**

Maj. Michael J Artelli , Dr Richard F Deckro, Dr Marcus B Perry and Col. Daniel J Zalewski, "Public Resolve: The Casualty of the "Long War", Presented in WG 8 and WG 32, 75th Military Operations Research Society Symposium, June 2007. [COA]

#### **6.5.4. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

**ANDERSON, BRADLEY E., Lt Col, [COA]**

Reviewer: Decision Sciences Institute (DSI ) Journal & Journal of Applied Mathematics and Decision Sciences (JAMDS).

**BAUER, KENNETH W. Jr., [COA]**

QWEST member: Dr. Steve Rogers, Chief Scientist for Sensor Fusion and ATR at AFRL/SN has formed a QWEST advisory board to develop a new way to approach pattern recognition problems. The members are Dr. Rogers, Dr Matt Kabrisky (AFIT EE emeritus professor), Dr. Oxley (Mathematic Dept.), and Dr. Bauer (Operational Sciences Dept.)

**JOHNSON, ALAN W., [COA]**

Session Chair, Air Force Supply Chain Analysis, INFORMS National Meeting, November 5-8, 2006, Pittsburgh.

Sessions Chair, Air Force Supply Chain Analysis, Defense Logistics Analysis, INFORMS National Meeting, November 4-7, 2007, Seattle.

Vice Chair, Space Logistics Technical Committee, American Institute of Aeronautics and Astronautics.

Council Member, Military Applications Society, INFORMS.

Member: Military Operations Research Society (MORS)/ Production and Operations Management Society (POMS).

Manuscript Reviewer: European Journal of Operational Research and Military Operations Research Journal.

**KNIGHTON, SHANE A., Maj, [COA]**

Member, Institute for Industrial Engineers and INFORMS.

**MELOUK, SHARIF H., [COA]**

Dayton Area Graduate Studies Institute (DAGSI) Representative.

Special Session Organizer & co-Chair, Flexible Automation and Intelligent Manufacturing Conference, Philadelphia, PA. June 18-20, 2007.

Session Organizer & Chair, Industrial Engineering Research Conference, Nashville, TN. May 19-23, 2007.

Treasurer, INFORMS Cincinnati/Dayton Chapter, 2006-07.

Membership Committee Member, INFORMS Simulation Society, 2006-07.

Referee for: European Journal of Operational Research, International Journal of Production Economics, Proceedings of 2007, and Industrial Engineering Research Conference.

**MILLER, J. O., [COA]**

INFORMS Simulation Society Council Representative (elected position).

Judge for MORS Rist Prize 2006 & 2007.

Associate Editor for International Journal of Operations Research.

Journal Referee: Military Operations Research, International Journal of Logistics: Research and Applications, and The Journal of Defense Modeling and Simulation.

Member AF Modeling and Simulation Workforce Development Working Group.

**MOORE, JAMES T., [COA]**

Advisor to Student INFORMS chapter, MORS student chapter, and Omega Rho international operations research society.

Associate Editor for journal Military Operations Research.

Member of Editorial Board for International Journal of Operational Research.

Military Operations Research Society (MORS) Working Group 18 (Mobility and Transport of Forces) Chair.

MAS Cluster Chair and a MAS session chair for INFORMS 2007 conference.

Judge for student competition at the 2007 MORS Education Colloquium and Professional Development Conference.

Member: MORS, INFORMS, Tau Beta Phi, Omega Rho, and Phi Beta Kappa.

Referee for: IIE Transactions, Omega, and European Journal of Operational Research.

#### **6.5.5. SUBSTANTIAL CONSULTATIONS**

**ANDERSON, BRADLEY E., Lt Col,**

Advisor to Army Joint Logistics Education & Development Forum, May 2007. [COA]

**JOHNSON, ALAN W.,**

1FW, 1AMXS, Langley AFB VA, 30 May – 1 June 2007, F-22 Sortie generation modeling. [COA]

Johnson, A.W., Royal Military College, Kingston Ontario, 19 June 2007, “AFIT Logistics-Focused Analysis.” [COA]

**KNIGHTON, SHANE A., Maj,**

“Course of Action Selection and Assessment”, AFRL Rome Laboratory, March & September 2007. [COA]

**MILLER, J. O.,**

AF/A9: ongoing discussions on modeling and simulation and analyst career development. [COA]

AFRL/VA: ongoing discussions on Combat Modeling with SEAS and FLAMES. [COA]

C17 SPO: ongoing discussions concerning Strategic Brigade Airdrop. [COA]

Miller, J.O. “Selected COA Research,” Canadian Royal Military College and Canadian Forces Land OR Group Visit, Kingston, ON Canada, 19 Jun 2007. [COA]

#### **6.5.6. BOOKS AND CHAPTERS IN BOOKS**

**JOHNSON, ALAN W.,**

Johnson, A., Brigantic, R., and Mahan, J., 2007, “Strategic Mobility and Deployment”, Methods for Conducting Military Operational Analysis: Best Practices in Use Throughout the Department of Defense, L. Rainey and A. Loerch, Editors, Military Operations Research Society, Publishers, pp 281-315. [COA]

## **6.6. CENTER FOR SPACE STUDIES AND RESEARCH**

Note: Beginning in FY08, the Space Studies Working Group replaced the designation CSSR.

### **Center for Space Studies and Research**

Homepage: <http://www.afit.edu/cssr/>

Chief 937-255-3636 x7469

Fax 937-656-7621, DSN 986-7621

### **6.6.1. FUNDED RESEARCH PROJECTS**

#### **COBB, RICHARD G.,**

“Element Set Generation Using a Commercial Telescope.” Sponsor: NASIC. Funding: \$3,000. [CSSR]

“Innovative Space Missions.” Sponsor: AFRL/VS. Funding: \$59,000. [CSSR/CSE]

#### **MALL, SHANKAR,**

“Nanocomposites as Lightweight Electronic Enclosures for Satellites.” Sponsor: SAF. Funding: \$94,869. [CSSR]

### **6.6.2. REFEREED JOURNAL PUBLICATIONS**

#### **COBB, RICHARD G.,**

Shepherd, M. J., Cobb, R. G., Peterson, G. A. and Palazotto, A.N., “Quasi-static Optics-based Surface Control of an In-plane Actuated Membrane Mirror” *Journal of Spacecraft and Rockets*, Vol. 44, No. 4, July 2007, pp. 953-963. [CSSR]

### **6.6.3. REFEREED PRESENTATIONS**

#### **COBB, RICHARD G.,**

Shepherd, M. J., Cobb, R. G., Peterson, G. A. and Palazotto, A.N., “Quasi-static Optics-based Surface Control of an In-plane Actuated Membrane Mirror” *Journal of Spacecraft and Rockets*, Vol. 44, No. 4, July 2007, pp. 953-963. [CSSR]

### **6.6.4. OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES**

#### **COBB, RICHARD G.,**

Irvin, D. R., Cobb, R.G., and Lovell, T. A., “A General Methodology For Minimum-Fuel Hovering Satellite Formations.” AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-271. [CSSR]

Jorris, T. R. and Cobb, R.G., “3-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints.” AAS/AIAA Astrodynamics Specialist Conference. 19-23 Aug 2007, AAS 07-304. [CSSR]

Irvin, D. R. and Cobb, R. G. “Multiple Leg Fuel-Optimal Trajectories for Hovering Satellites ” AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007 AAS 07-209. [CSSR]

Jorris, T. R. and Cobb, R.G., “2-D Trajectory Optimization Satisfying Waypoints and No-Fly Zone Constraints.” AAS/AIAA Spaceflight Mechanics Conference, Sedona AZ, 28 Jan - 1 Feb 2007, AAS 07-114. [CSSR]

## **6.7. CENTER FOR SYSTEMS ENGINEERING**

### **Center for Systems Engineering**

Education and Training Division

Homepage: <http://cse.afit.edu/>

Chief 937-255-3355 x3363

Fax 937-255-4981

### **6.7.1. FUNDED RESEARCH PROJECTS**

#### **COBB, RICHARD G.,**

“Innovative Space Missions.” Sponsor: AFRL/VS. Funding: \$59,000. [CSSR/CSE]

#### **COLOMBI, JOHN M., Lt Col,**

“Human Systems Interface Research.” Sponsor: AFRL/HE. Funding: \$10,000. [CSE]

#### **HAVLICEK, JEFFREY D., Maj,**

“Resourcing Global Strike or Global Persistent Attack Architecture.” Sponsor: ACC. Funding: \$50,150. [CSE]

#### **JACQUES, DAVID R.,**

“Counter-Improvised Explosive Device (C-IED) Effort Analysis.” Sponsor: ACC. Funding: \$50,000. [CSE]

#### **STROUBLE, DENNIS D.,**

“Air Force Center for Systems Engineering A-10 Systems Engineering Case Study.” Sponsor: AFIT/SY. Funding: \$31,000.

#### **WALTER, JEORG, Maj,**

“Impacts of Uninhabited Operation on Long-Range Strike Aircraft.” Sponsor: AFRL/VA. Funding: \$15,000. [CSE]

### **6.7.2. FUNDED EDUCATIONAL PROJECTS**

#### **JACQUES, DAVID R.,**

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: \$60,000. [CSE]

#### **WALTER, JEORG, Maj,**

“SENG 585NC.” Sponsor: AFOTEC. Funding: \$49,725. [CSE]

## APPENDICES

### APPENDIX A: FACULTY CREDENTIALS

*NOTE: Additional information may be obtained from the AFIT Yellow Pages at <http://www.afit.edu/YellowPages/default.cfm>*

#### **DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS**

Access Phone: 937-255-3069, DSN 785-3069

Fax: 937-656-7621, DSN 986-7621

Homepage: <http://www.afit.edu/en/eny/>

**BLACK, JONATHAN T.,** Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2007 (AFIT/ENY); BS Industrial Engineering, University of Illinois at Urbana-Champaign, 2001; MS Mechanical and Aerospace Engineering, Joint Institute for Advancement of Flight Sciences (joint NASA Langley Research Center and George Washington University program), 2003; PhD Mechanical Engineering, University of Kentucky, 2006. Dr. Black's research interests include lightweight and inflatable aerospace structures, structural and nonlinear dynamics, noncontact measurement systems, and computational structural mechanics. His current work involves developing novel measurement and modeling techniques to characterize the static and dynamic behavior of new, stiff, self-deploying lightweight aerospace structures. Tel. 255-3636 x4578, email: [jonathan.black@afit.edu](mailto:jonathan.black@afit.edu)

**BLUE, PAUL A., Maj,** Instructor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS, University of Nebraska - Lincoln, 1993; MS, University of Minnesota - Twin Cities, 1995; PhD (ABD), University of Minnesota - Twin Cities, 2004. Maj Blue's research interests include the guidance and control of aerospace vehicles and the flight-testing of advanced control concepts. His current research is focused on guidance, navigation, and control of small unmanned aircraft systems, operator interfaces, and developing techniques to evaluate a controlled system's performance (e.g. an aircraft's handling qualities) based on the operators ability to perform a given task. Maj Blue's prior assignments include Flight Control Research Engineer at the Air Vehicles Directorate of the Air Force Research Laboratory and Exchange Engineer at the German Aerospace Center. He has several publications, including a textbook on robust control with Prof. Juergen Ackermann et al. Tel. 937-255-3636 x4714 (DSN 785-3636 x4714), email: [Paul.Blue@afit.edu](mailto:Paul.Blue@afit.edu).

**BRANAM, RICHARD D., Maj,** Assistant Professor of Aeronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Aerospace Engineering, The Ohio State University, 1993; MS, Aeronautical Engineering, Air Force Institute of Technology, 1997; PhD, Aerospace Engineering, The Pennsylvania State University, 2005. Major Branam's primary research areas of interest are rocket propulsion and hypersonics. Previous assignments include research scientist at the German Aerospace Center in the area of supercritical injection and as program manager of the upper stage rocket demonstration at the Air Force Research Laboratory. Tel. 937-255-3636 x7485 (DSN 785-3636 x7485), email: [richard.branam@afit.edu](mailto:richard.branam@afit.edu).

**CANFIELD, ROBERT A.,** Associate Professor in Aeronautics and Astronautics, Department of Aeronautics and Astronautics, 2000 (AFIT/ENY); BSE, Mechanical Engineering, Duke University, 1983; MS, Aeronautics and Astronautics, Stanford University, 1984; PhD, Engineering Mechanics, Virginia Polytechnic Institute and State University, 1992. Dr. Canfield's research interests include structural optimization, multidisciplinary analysis and design methods, structural dynamics and controls, and aeroelasticity. He has published two textbooks, 32 journal articles and 56 papers in conference proceedings on these topics. Dr. Canfield is the former Program Manager for Computational Mathematics at the Air Force Office of Scientific Research (AFOSR) and AFOSR Director of Policy and Integration. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 937-255-3636 x4723, (DSN 785-3636 x4723), email: [Robert.Canfield@afit.edu](mailto:Robert.Canfield@afit.edu).

**CALICO, ROBERT A., Jr.**, Professor Emeritus of Aerospace Engineering, AFIT Appointment Date: 1972 (AFIT/EN); BS, University of Cincinnati, 1966; MS, University of Cincinnati, 1968; PhD, University of Cincinnati, 1971. Dr. Calico's research interests include aircraft stability and control, analytical dynamics, stability of non-linear systems, satellite dynamics, control theory, and vibration analysis. Tel. 937-255-3025 (DSN 785-3025), email: [Robert.Calico@afit.edu](mailto:Robert.Calico@afit.edu).

**COBB, RICHARD G.**, Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2001 (AFIT/ENY); BS, the Pennsylvania State University, 1988; MS, Air Force Institute of Technology, 1992; PhD, Air Force Institute of Technology, 1996. Research interests include dynamics and control of flexible space structures for remote sensing applications, system identification techniques, control of micro air vehicles, and applications of optimal control theory. Prior to teaching at AFIT, Dr. Cobb was responsible for the establishment of an Air Force wide Reliability Centered Maintenance program to enhance jet engine reliability. In recognition of his accomplishments, Dr. Cobb was selected as the 2001 Senior Military Engineer of the Year for the Aeronautical Systems Center. Prior to his assignment at WPAFB in September 1999, Dr. Cobb served as program manager for the Air Force Research Laboratory's TechSat 21 program, a revolutionary satellite technology program investigating the feasibility of using distributed micro-satellite constellations to satisfy Air Force global sensing requirements. While at Kirtland AFB NM, Dr. Cobb also served as the technical advisor for the Space Vehicles Technology Branch, and Chief of the Dynamic Systems Group. Tel. 937-255-3636 x4559 (DSN 785-3636 x4559), email: [Richard.Cobb@afit.edu](mailto:Richard.Cobb@afit.edu)

**FRANKE, MILTON E.**, Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1959 (AFIT/ENY); BME, University of Florida, 1952; MSME, University of Minnesota, 1954; PhD, The Ohio State University, 1967. Research interests include fluid transmission lines, thrust vector control, high lift aerodynamics, fluidics, cavity acoustics, thrust augmenting ejectors, heat transfer, electrostatic cooling, boundary layers, aerodynamic in-ground effects, lean aerospace initiatives, reusable launch vehicles, and engineering of complex systems. Dr. Franke has authored or co-authored over 130 technical articles. He holds five patents, was the recipient of the AFIT Charles A. Stone Award in 1986 and the AFIT Bernard A. Schriever Award in 1993. Dr. Franke is a retired colonel in the Air Force Reserve. He is chair of the Committee on Organization and Rules (a committee of the ASME Board of Governors), past Vice President for Communications of the ASME (1990-1992), past Vice President for Systems and Design of the ASME (1993-1996), co-chair of the AIAA Weapon System Effectiveness Technical Committee, a Fellow of the ASME, and Associate Fellow of the AIAA. Dr. Franke retired 31 March 2007. Tel. 937-255-3636, x 4720 (DSN 785-3636, x 4720), email: [milton.franke@afit.edu](mailto:milton.franke@afit.edu)

**GREENDYKE, ROBERT B.**, Associate Professor of Aeronautics and Astronautics and Director, AFIT Scientist and Engineer Education Programs at Kirtland AFB; Appointment Date: 2005 (AFIT/ENY); BBA, Economics, Baylor University, 1979; BS, Aerospace Engineering, Texas A&M University, 1986; MS, Aerospace Engineering, Texas A&M University, 1988; PhD, Interdisciplinary Engineering, Texas A&M University, 1998. Dr. Greendyke research interests include computational fluid dynamics, Direct Simulation Monte Carlo methods, hypersonic and reacting flows, radiation simulation, thermophysics, and plasma simulation. Dr. Greendyke was a Research Scientist at NASA-Langley Research Center studying re-entry and aerobraking flows, and an Associate Professor in the University of Texas at Tyler establishing a start-up Mechanical Engineering Program from concept through accreditation. He has published over 30 journal articles, technical reports and conference publications in multiple fields. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 937-255-3636 x4567, email: [robert.greendyke@afit.edu](mailto:robert.greendyke@afit.edu)

**HICKS, KERRY D., Lt Col**, USAF Deputy Department Head and Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY), BS Aeronautical and Astronautical Engineering, University of Illinois (UIUC), 1985; MS Astronautical Engineering, Air Force Institute of Technology, 1986; PhD Astronautical Engineering, Air Force Institute of Technology, 1989. Lt Col Hicks' research interests include astrodynamics, re-entry dynamics, and electric space propulsion with emphasis on numerical solutions and mathematical modeling. He has published several conference papers and journal articles as well as DoD publications. He is a member of Tau Beta Pi and a Senior Member of AIAA. Tel. 937-255-3636 x4568 (DSN 785-3636 x4568), email: [Kerry.Hicks@afit.edu](mailto:Kerry.Hicks@afit.edu)

**JACQUES, DAVID R.**, Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1999 (AFIT/ENY); BSME, Lehigh University, 1983; MSAE, Air Force Institute of Technology, 1989; PhD, Air Force Institute of Technology, 1995. Dr. Jacques' primary research is in the field of stability and control of air and space vehicles. He has published several papers on constrained optimal control synthesis, and co-authored a software toolbox that utilized his synthesis techniques. Current research addresses cooperative behavior and control for air and space vehicles, and general Systems Engineering theory and application. Dr. Jacques has extensive experience in munition system development and analysis, as well as ballistic system test. He is the curriculum chair for Systems Engineering and serves as Chief, Education and Training Division, AF Center for Systems Engineering. Tel. 937-255-3355 x3329 (DSN 785-3355 x3329), email: [David.Jacques@afit.edu](mailto:David.Jacques@afit.edu).

**KING, PAUL I.**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1991 (AFIT/ENY); BS, Arizona State University, 1971; MS, Air Force Institute of Technology, 1972; PhD, Oxford University, England, 1986. Former faculty member at the U.S. Air Force Academy and Cleveland State University, Cleveland, Ohio. Dr. King's research interests include internal and external aerodynamics and heat transfer (wings and bodies, turbomachinery and other applications). His research emphasizes experimentation and simulations. Tel. 937-255-3636 x4628 (DSN 785-3636 x4628), email: [Paul.King@afit.edu](mailto:Paul.King@afit.edu).

**KUNZ, DONALD L.**, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003 (AFIT/ENY); BS, Syracuse University, 1971; MS, Georgia Institute of Technology, 1972; PhD, Georgia Institute of Technology, 1976; Dr. Kunz's research interests include rotorcraft dynamics, vibrations, and loads, structural dynamics, aeroelasticity, multibody dynamics, smart structures, and computational structural mechanics. He has published more than 60 journal articles, conference papers, and technical reports. Prior to coming to AFIT, Dr. Kunz worked at the US Army Aeroflightdynamics Directorate, McDonnell Douglas Helicopter Company, Old Dominion University, and the US Army Aviation and Missile Command. He is an Associate Fellow of AIAA; a member of AHS and ASME; and a licensed professional engineer in the Commonwealth of Virginia. Tel. 937-255-3636 x4548 (DSN 785-3636 x4548), email: [Donald.Kunz@afit.edu](mailto:Donald.Kunz@afit.edu).

**LIEBST, BRADLEY S.**, Professor of Aerospace Engineering and Head, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1989 (AFIT/ENY); BS, Wichita State University, 1978; MS, Massachusetts Institute of Technology, 1979; PhD, Massachusetts Institute of Technology, 1981. Dr. Liebst's research interests include eigenstructure assignment and control, stability and control of aerospace vehicles, passive and active control of large flexible structures, and aircraft handling qualities. He has published over 30 articles and reports and chaired over 40 theses and dissertations. Prior to teaching at AFIT, Professor Liebst was Assistant Professor of Aerospace Engineering for 6 years at the University of Minnesota where he was voted the 1987 Best Institute of Technology (U of M) Professor. Tel. 937-255-3636 x4636 (DSN 785-6565 x4636), email: [Bradley.Liebst@afit.edu](mailto:Bradley.Liebst@afit.edu).

**MALL, SHANKAR**, Professor, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1986 (AFIT/ENY); BS, Mechanical Engineering, Banaras Hindu University, India, 1964; MS, Mechanical Engineering, Banaras Hindu University, 1966; PhD, Mechanical Engineering, University of Washington, 1977. Dr. Mall's research centers on composite and smart materials, fatigue and fracture. Dr. Mall has authored over 100 papers and has been the co-editor of a book and five conference proceedings. He is a Fellow of ASME, Associate Fellow of AIAA. He is also the Principal Materials Research Engineer, Materials and Manufacturing Directorate, Air Force Research Laboratory. He is associate editor of several journals. Tel. 937-255-3636 x4587 (DSN 785-3636 x4587), email: [Shankar.Mall@afit.edu](mailto:Shankar.Mall@afit.edu).

**MAPLE, RAYMOND C., Lt Col**, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2002 (AFIT/ENY); BS, Cornell University, 1985; MS, Air Force Institute of Technology, 1989; PhD, Air Force Institute of Technology, 2002. Lt Col Maple's interests include computational fluid dynamics and parallel computing, with an emphasis on algorithm development, visualization, fluid-structure interaction, and aircraft store separation applications. Lt Col Maple is a senior member of the American Institute of Aeronautics and Astronautics (AIAA). Tel. 937-255-3636 x4577 (DSN 785-3636 x4755), email: [Raymond.Maple@afit.edu](mailto:Raymond.Maple@afit.edu).

**PALAZOTTO, ANTHONY N.**, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1975 (AFIT/ENY); BS, New York University, 1955; MS, Brooklyn Polytechnic Institute, 1961; PhD, New York University, 1968. Professor Palazotto's interests include nonlinear mechanics, shell analysis, finite elements, composite materials, viscoplasticity and nonlinear dynamics. Dr. Palazotto is the co-author of a textbook, "The Nonlinear Analysis of Shell Structures," published in 1992 by the AIAA. In addition he has authored over 165 archival technical publications and more than 330 technical reports and manuscripts. Dr. Palazotto received the Hetenyi Award in 1982 from the Society of Experimental Mechanics, the Cleary Award in 1981 from the Air Force Materials Lab, and the Structures and Materials Award from the ASCE in 1986. Dr. Palazotto is a Fellow of the ASCE and an Associate Fellow of the AIAA. He is a registered Professional Engineer. Tel. 937-255-3636 x4599 (DSN 785-3636 x4599), email: [Anthony.Palazotto@afit.edu](mailto:Anthony.Palazotto@afit.edu).

**REEDER, MARK F.**, Assistant Professor of Aerospace Engineering, AFIT Appointment Date: 2002 (AFIT/ENY); BS, Mechanical Engineering, West Virginia University, 1989; MS, Mechanical Engineering, Ohio State University, 1991; PhD, Mechanical Engineering, Ohio State University, 1994; Prior to accepting a position with AFIT, Dr. Reeder served as an NRC Research Associate at NASA Glenn and subsequently as the manager of Research and Development for a manufacturer of industrial mixing equipment. Dr. Reeder's research interests include all aspects of fluid mechanics with an emphasis on experimental applications involving external aerodynamics, mixing enhancement and propulsion. Recent publications include a characterization of store separation from a cavity using pressure sensitive paint and measurements of a micro air vehicle using a 6-DOF balance. He has been published in a variety of journals including the Journal of Fluid Mechanics, The AIAA Journal, The AIAA Journal of Propulsion and Power, Physics of Fluids, NASA Tech Briefs, and Chemical Engineering Progress. He has three patents to his credit and is a licensed Professional Engineer in the State of Ohio. Dr. Reeder is an Associate Fellow of the AIAA and a member of ASME. Tel. 937-255-3636 x4530 (DSN 785-3636 x4530), email: [Mark.Reeder@afit.edu](mailto:Mark.Reeder@afit.edu).

**RUGGLES-WRENN, MARINA B.**, Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003 (AFIT/ENY); BS, Polytechnic Institute of New York, 1981; MS Rensselaer Polytechnic Institute, 1983; PhD, Rensselaer Polytechnic Institute, 1987. Dr. Ruggles-Wrenn's interests center on mechanics of materials and structures, including experimental investigation of time-dependent material behavior, viscoplasticity, advanced composite materials, nano-composites, and high-temperature structural design methods. Dr. Ruggles-Wrenn has published over 60 journal articles and technical reports, and has co-authored 5 books on fatigue, fracture, and high temperature structural design methods. Dr. Ruggles-Wrenn received several research and best paper awards. She served as an associate technical editor of the ASME Journal of Pressure Vessel Technology (1996-2002). She currently chairs the ASME PVPD Design & Analysis Technical Committee. Dr. Ruggles-Wrenn is a Fellow of the ASME. Tel. 937-255-3636 x4641 (DSN 785-3636 x4641), email: [Marina.Ruggles-Wrenn@afit.edu](mailto:Marina.Ruggles-Wrenn@afit.edu)

**SHEARER, CHRISTOPHER M.**, Assistant Professor of Aerospace Engineering, AFIT Appointment Date: September 2006 (AFIT/ENY); BS Aerospace Engineering, Texas A&M University, 1992, MS Aerospace Engineering, AFIT, 1997; PhD Aerospace Engineering, University of Michigan, 2006. Maj Shearer's research interests include computational and experimental structural dynamics of High Altitude Long Endurance (HALE) aircraft. He is also interested in flight dynamics and control of aircraft as well as aircraft design. Previous research has focused on Model Predictive Control (MPC) methods used on a nonlinear aircraft model, flight testing of auto ground collision avoidance systems, and HALE aircraft. He is a licensed FAA Certified Flight Instructor and a member of AIAA, Tau Beta Pi, and the Experimental Aircraft Association. Tel. 937-255-3636 x4643 (DSN 785-3636 x4643), email: [Christopher.shearer@afit.edu](mailto:Christopher.shearer@afit.edu)

**SONI, SOM R.**, Associate Professor of Aerospace Engineering, AFIT Appointment Date: 2006 (AFIT/ENY); BS (Hons), Punjab University, 1967; MS, University of Roorkee (renamed as IIT Roorkee) India, 1969; PhD, University of Roorkee (renamed as IIT Roorkee) India, 1972. Dr. Soni's interests include teaching and research related to systems engineering design, analytical and experimental mechanics of composite materials and structures. Recent studies include: a) Systems Engineering Approach to Integrated Health Monitoring System for Aging Aircrafts. b) Ballistic response of co-cured adhesive bonded composite joints; c) Embedded MEMS devices in composite material structures and measure pressure and strain; d) "CrackTrack" electronic system to measure high strain rate crack growth in DCB specimens; e) Bonded and Bolted Joints which resulted in a fully documented software package called **BBJ**; f) Failure Mechanisms in Braided and Woven Fabric Composites; g) Multidirectional analytical and experimental failure of composite cruciform specimens. Dr. Soni is author/ co-author of 80+ research publications in the field of mechanics of solids and structures with special emphasis on composites. Dr. Soni is a Fellow of the American Society for Composites, an Associate Fellow of AIAA and a member of SAMPE. He has won numerous awards including Cleary Award, Edison Emerging Technology Award, Enterprise Spirit Award, and Dayton Affiliate Society Council Award for his professional accomplishments. Tel. 937-255-3355 x3420 (DSN 785-3636 x3420), email: [som.soni@afit.edu](mailto:som.soni@afit.edu).

**SWENSON, ERIC D.**, Assistant Professor of Aerospace Engineering, AFIT Appointment Date: August 2005 (AFIT/ENY); BS Civil Engineering, The Ohio State University, 1993, MS Astronautical Engineering, AFIT; PhD Aerospace Engineering, University of Texas at Austin. Maj Swenson's research interests include computational and experimental structural dynamics of complex structures with passive and active damping. Previous research has focused on solving multi-million degree of freedom finite element models with viscoelastic materials, damage detection techniques, and system identification through optimization. He is a member of AIAA, Chi Epsilon, SAME, and Tau Beta Pi. Tel. 937-255-3636 x4628 (DSN 785-3636 x4628), email: [eric.swenson@afit.edu](mailto:eric.swenson@afit.edu).

**TITUS, NATHAN A., Lt Col**, Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS Aeronautics & Astronautics, University of Washington, 1986; MS Astronautical Engineering, Air Force Institute of Technology, 1992; PhD Astronautical Engineering, Air Force Institute of Technology, 1998. Lt Col Titus' research interests include spacecraft attitude dynamics and control, spacecraft systems, robotic manipulators, nonlinear control, and applied optimal control. His dissertation work investigated nonlinear techniques for the control of a robotic manipulator mounted on a free-flying satellite, with a focus on the management and avoidance of singular configurations. Tel. 937-255-3636 x7469 (DSN 785-3636 x7469), email: [Nathan.Titus@afit.edu](mailto:Nathan.Titus@afit.edu)

**TORVIK, PETER J.**, Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, (AFIT/ENY); BS, University of Minnesota, 1960; MS, University of Minnesota, 1962; PhD, University of Minnesota, 1965; BA, Wright State University, 1980. Professor Torvik is a specialist in theory of elasticity, wave propagation, shock and vibration, impact damage in aircraft systems, laser-material interactions, and aircraft survivability/ vulnerability. His primary research interests include structural dynamics, specifically, damping, impact, and penetration mechanics. Dr. Torvik is the author of over 100 technical papers and reports and some 30 other publications. He served as Head of the Department of Aeronautics and Astronautics, 1980-1990. He is the recipient of the AF Meritorious Civilian Service Award, the AF Exceptional Civilian Service Award, the Outstanding Civilian Career Service Award, USAF, and the John Leland Atwood Award and Medal, AIAA and ASEE. Dr. Torvik is a Fellow of AIAA, a Fellow of the ASME, and a Fellow of Ohio Academy of Science. Tel. 937-255-3636 x4740 (DSN 785-3636 x4740), email: [Peter.Torvik@afit.edu](mailto:Peter.Torvik@afit.edu).

**WALTER, JOERG D., Maj**, Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003 (AFIT/ENY); BSME, Michigan State University, 1992; MSSE, Air Force Institute of Technology, 1997; PhD, Reliability Engineering, University of Maryland, 2003. Maj Walter's research interests include reliability and systems engineering topics such as integrated structural health monitoring and systems architecture development in areas such as micro unmanned aerial vehicles (MAVs), persistent intelligence, surveillance and reconnaissance (ISR) and adaptive command and control systems. He is a member of INCOSE and NDIA. Tel. 937-255-3355 x3350 (DSN 785-3355 x3350), email: [joerg.walter@afit.edu](mailto:joerg.walter@afit.edu)

**WIESEL, WILLIAM E., JR.**, Professor of Astronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1981 (AFIT/ENY); BS, University of Massachusetts, 1970; MS, Harvard University, 1972; PhD, Harvard University, 1974. Dr. Wiesel's research interests include orbital mechanics and astrodynamics, chaotic systems, estimation and control, planetary astronomy, stability theory, and optimal control. Dr. Wiesel is the author of Spaceflight Dynamics, the leading introductory text on astronautical engineering. He has authored over 30 technical papers and has been a member of the department for 31 years. Tel. 937-255-3636 x4312 (DSN 785-3636 x4312), email: [William.Wiesel@afit.edu](mailto:William.Wiesel@afit.edu)

**DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

Access Phone: 937-255-2024, DSN 785-2024

Fax: 937-656-7061, DSN 986-7061

Homepage: <http://www.afit.edu/en/eng/>

**ANDEL, TODD R., Capt**, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2007 (AFIT/ENG), BSCE, University of Central Florida, 1998; MSCE, Air Force Institute of Technology, 2002; PhD 2007, Computer Science, Florida State University, 2006. His research interests include formal methods, secure routing protocols, and network simulation. Tel. 937-255-3636 x4901 (DSN 785-3636 x4901), email: [Todd.andel@afit.edu](mailto:Todd.andel@afit.edu)

**BALDWIN, RUSTY O.**, Associate Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1999 (AFIT/ENG), BSEE, New Mexico State University, 1987; MS, Computer Engineering, Air Force Institute of Technology, 1992; PhD, Virginia Polytechnic Institute and State University, 1999. His research interests include computer communication networks, information warfare, performance modeling, and analysis and simulation of real-time communication systems. Tel. 937-255-6565 x 4445 (DSN 785-6565 x4445), email: [Rusty.Baldwin@afit.edu](mailto:Rusty.Baldwin@afit.edu).

**CAIN, STEPHEN C.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG), BSEE, University of Notre Dame, 1992; MSEE, Michigan Technological University, 1994; PhD, University of Dayton, 2001. His research interests include electro-optics, remote sensing, and signal processing. Tel. 937-255-3636 x4625 (DSN 785-3636 x4625), email: [Stephen.Cain@afit.edu](mailto:Stephen.Cain@afit.edu).

**COLLINS, PETER J.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG); BA, Bethel College, MN, 1985; BSEE, University of Minnesota, 1985; MSEE, Air Force Institute of Technology, 1990; PhD, Air Force Institute of Technology, 1996. His research interests include low observables, computational electromagnetics, radar cross section metrology, remote sensing, and electromagnetic material design and analysis. He is a senior member of the IEEE. Tel. 937-255-3636 x7256 (DSN 785-3636 x7256), email: [Peter.Collins@afit.edu](mailto:Peter.Collins@afit.edu)

**DAVIS, NATHANIEL. J. IV**, Professor and Head, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2005 (AFIT/ENG), BSEE, Virginia Polytechnic Institute and State University, 1976, MSEE, Virginia Polytechnic Institute and State University, 1977, Ph.D. Purdue University, 1985. His research interests include computer communications networks, cyber operations, and large scale computer architectures. Tel. 937-255-3636 x7218 (DSN 785-3636 x7218), email: [Nathaniel.Davis@afit.edu](mailto:Nathaniel.Davis@afit.edu).

**FELLOWS, JAMES A., Lt Col**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG); BSEE, Clarkson University, 1987; MSEE, Air Force Institute of Technology, 1993; PhD, Air Force Institute of Technology, 2001. Lt Col Fellows' research interests include microelectronic device fabrication & test, infrared detectors, and nanotechnology. His areas of expertise include semiconductor materials characterization and semiconductor physics. Tel. 937-255-3636 x7230 (DSN 785-3636 x7230), email: [James.Fellows@afit.edu](mailto:James.Fellows@afit.edu).

**GUSTAFSON, STEVEN C.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1998 (AFIT/ENG); BS, University of Minnesota, 1967; MS, Duke University, 1969; PhD, Duke University, 1974. Dr. Gustafson is an author of more than 200 publicly available technical papers, proceedings, and reports, most of which relate to optical processing and pattern recognition technology. He has been initiator and principal investigator on more than \$2 million in research contracts in these areas since 1990. Tel. 937-255-3636 x4598 (DSN 785-3636 x4598), email: [Steven.Gustafson@afit.edu](mailto:Steven.Gustafson@afit.edu).

**HARTRUM, THOMAS C.**, Associate Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, (AFIT/ENG); BEE, The Ohio State University, 1969; MS, The Ohio State University, 1969; MBA, Wright State University, 1979; PhD, The Ohio State University, 1973. Dr. Hartrum's research interests include parallel and distributed computing, and formal methods in software engineering. He has authored or co-authored over 20 conference and journal articles. He is currently conducting research in object-oriented modeling and formal methods in software engineering. He is a member of the IEEE. Tel. 937-255-2024 (DSN 785-2024), email: [Thomas.hartrum@afit.edu](mailto:Thomas.hartrum@afit.edu).

**HAVRILLA, MICHAEL J.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2002 (AFIT/ENG); BS, Michigan State University, 1987, MSEE, Michigan State University, 1989, PhD, Michigan State University, 2001. His research interests include electromagnetics, guided wave theory and applications, material characterization, low observables, electromagnetic scattering and antenna theory. He is a member of HKN and a Senior member of the IEEE. Tel. 937-255-3636 x4582 (DSN 785-3636 x4582), email: [Michael.Havrilla@afit.edu](mailto:Michael.Havrilla@afit.edu).

**HOPKINSON, KENNETH M.**, Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG), BS, Computer Science, Rensselaer Polytechnic Institute, 1997; MS, Computer Science, Cornell University, 2002; PhD, Computer Science, Cornell University 2004. His research interests include distributed systems, networking, and simulation. Tel. 937-255-3636 x4579 (DSN 785-3636 x4579), email: [Kenneth.Hopkinson@afit.edu](mailto:Kenneth.Hopkinson@afit.edu).

**HOUPIS, CONSTANTINE H.**, Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, (AFIT/ENG); BS, University of Illinois, 1947; MS, University of Illinois, 1948; PhD, University of Wyoming, 1971. His research interests include guidance and control of aerospace vehicles, application of optimal control theory to engineering systems, flight control systems, digital control systems, computational and numerical methods for control system design, linear and nonlinear control theory, multivariable theory, and quantitative feedback theory. Professor Houpis has published numerous technical articles and textbooks. He is a registered professional engineer and a Fellow of the IEEE. Tel. 937-255-3636 x4615 (DSN 785-3636 x4615), email: [Constantine.Houpis@afit.edu](mailto:Constantine.Houpis@afit.edu).

**KABRISKY, MATTHEW**, Professor Emeritus, Department of Electrical and Computer Engineering, (AFIT/ENG); BEE, Polytechnic Institute of Brooklyn, 1951; MEE, Polytechnic Institute of Brooklyn, 1952; PhD, University of Illinois, 1964. His areas of expertise include information processing in the human central nervous system and mathematical models of the man machine interface. Dr. Kabrisky is the author and co-author of two books and 60 technical articles. He has chaired over 100 theses and dissertations in his 30+ years in the Department. Tel. 937-255-2024 (DSN 785-2024), email: [Matthew.Kabrisky@afit.edu](mailto:Matthew.Kabrisky@afit.edu).

**KIM, YONG C.**, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG); BSCE, University of Washington, 1995; MSECE, University of Wisconsin, 1997; PhD, University of Wisconsin, 2002. His areas of interest are advanced computer architecture, VLSI design, test, design for testability, synthesis, CAD tools, reconfigurable and fault-tolerant computing. Tel. 937-255-3636 x4620 (DSN 785-3636 x4620), email: [Yong.Kim@afit.edu](mailto:Yong.Kim@afit.edu).

**KURKOWSKI, STUART H., Maj**, Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG), BSCS, United States Air Force Academy, 1991; MSIM, Troy State University, 1995; MSCS, Air Force Institute of Technology, 2000; PhD, Colorado School of Mines, 2006. His research interests include networking, simulation, and information visualization. Tel. 937-255-3636 x7228 (DSN 785-3636 x7228), email: [Stuart.Kurkowski@afit.edu](mailto:Stuart.Kurkowski@afit.edu).

**LAMONT, GARY B.,** Professor of Electrical and Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appoint Date: 1970 (AFIT/ENG); Bachelor of Physics 1961 , University of Minnesota; MSEE 1967 , University of Minnesota; PhD 1970, University of Minnesota; Developmental Engineer, Honeywell Aerospace, 1961-1967. Research interests include evolutionary computation, natural computing, parallel and distributed computing, network security, and autonomous UAV swarms. Tel. 937-255-3636 x4718, email: [Gary.Lamont@afit.edu](mailto:Gary.Lamont@afit.edu)

**MARTIN, RICHARD K.,** Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG), BSEE & BS Physics, University of Maryland at College Park, 1999; MSEE, Cornell University, 2001; PhD, Cornell University, 2004. His research interests include signal processing and communication systems. Tel. 937-255-3636 x4625, (DSN 785-3636 x4625), email: [Richard.Martin@afit.edu](mailto:Richard.Martin@afit.edu).

**MAYBECK, PETER S.,** Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1973 (AFIT/ENG); BS, Massachusetts Institute of Technology, 1968; PhD, Massachusetts Institute of Technology, 1972. Dr. Maybeck's research interests include optimal estimation and stochastic control, Kalman filtering, adaptive estimation, pointing and tracking, optimally aided inertial navigation systems, multiple model adaptive filtering. He is the author of the widely recognized three-volume reference text, "Stochastic Models, Estimation and Control" and of over 100 technical articles. Dr. Maybeck has received numerous national and local awards including the C. Holmes MacDonald Distinguished Young Electrical Engineering Teacher and the ASEE Frederick Emmons Terman Award as the outstanding Electrical Engineering Professor in the US for 1985. He is a Fellow of the IEEE. Tel. 937-255-3636 x4581 (DSN 785-3636 x4581), email: [Peter.Maybeck@afit.edu](mailto:Peter.Maybeck@afit.edu).

**MAYER, CHRISTOPHER B., Maj,** Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG); BSEE, Texas A&M University, 1992; MSEE, Air Force Institute of Technology, 1997; PhD, Arizona State University 2005. His research interests include combinatorial optimization problems, data mining, and swarm intelligence. Tel. 937-255-3636 x4542 (DSN 785-3636 x4542), email: [Christopher.Mayer@afit.edu](mailto:Christopher.Mayer@afit.edu).

**McDONALD, J. TODD, Lt Col,** Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG), BSCS, United States Air Force Academy, 1986; MBA, University of Phoenix, 1996; MSCE, Air Force Institute of Technology, 2000; PhD, Computer Science, Florida State University, 2006. His research interests include software protection, mobile agents, software engineering, and databases. Tel. 937-255-3636 x4639 (DSN 785-3636 x4639), email: [jmcdonal@afit.edu](mailto:jmcdonal@afit.edu).

**MENDENHALL, MICHAEL J., Maj,** Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG), BS in Computer Engineering, Oregon State University, 1996; MS in Computer Engineering, Air Force Institute of Technology, 2001; Ph.D. in Electrical Engineering, Rice University, 2006. His research interests include machine learning, automatic target recognition, joint compression & classification, hyperspectral image processing. Tel. 937-255-3636 x4614 (DSN 785-3636 x4614), email: [Michael.Mendenhall@afit.edu](mailto:Michael.Mendenhall@afit.edu).

**MILLS, ROBERT F.,** Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG); Center for Information Security Education and Research (CISER); BSEE, Montana State University, 1983; MSEE, Air Force Institute of Technology, 1987; PhD, University of Kansas, 1994. His areas of interest include digital and spread spectrum communications, electronic warfare, cyber operations and warfare, insider threat mitigation, and C4ISR architectures. Tel. 937-255-3636 x4527 (DSN 785-3636 x4527), email: [Robert.Mills@afit.edu](mailto:Robert.Mills@afit.edu).

**MULLINS, BARRY E.**, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG), BS Computer Engineering, University of Evansville, 1983; MS Computer Engineering, Air Force Institute of Technology, 1987; PhD, Virginia Polytechnic Institute and State University, 1997. His research interests include computer communication networks, embedded (sensor) and wireless networking, and information assurance. Dr. Mullins has received the U.S. Air Force Academy's Outstanding Academy Educator award as well as the Brig. Gen. R. E. Thomas award for outstanding contribution to cadet education twice. He is a member of Tau Beta Pi, Eta Kappa Nu and a senior member of IEEE. Tel. 937-255-3636 x7979 (DSN 785-3636 x7979), email: [Barry.Mullins@afit.edu](mailto:Barry.Mullins@afit.edu).

**PACHTER, MEIR**, Professor, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1993 (AFIT/ENG); BS, Israel Institute of Technology, 1967; MS, Israel Institute of Technology, 1969; PhD, Israel Institute of Technology, 1975. Dr. Pachter's fields of expertise include automatic control of aircraft and missiles, adaptive control and system identification, inertial and GPS Navigation, autonomous control/neural networks/fuzzy logic control, nonlinear control and applied mathematics. Dr. Pachter has published papers in these areas and in differential games, robotics, and the theory of computational geometry. Tel. 937-255-3636 x4593 (DSN 785-3636 x4593), email: [Meir.Pachter@afit.edu](mailto:Meir.Pachter@afit.edu).

**PETERSON, GILBERT L.**, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2002 (AFIT/ENG); BS Architecture University of Texas at Arlington, 1995; MS, Computer Science, University of Texas at Arlington, 1998; PhD, University of Texas at Arlington, 2001. His research interests include uncertainty in artificial intelligence, robotics, machine learning, datamining, and digital forensics. Tel. 937-255-6565 x4281 (DSN 785-6565 x4281), email: [Gilbert.Peterson@afit.edu](mailto:Gilbert.Peterson@afit.edu).

**POTOCZNY, HENRY B.**, Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1981 (AFIT/ENG); BA, La Salle University, 1965; MA, University of Kentucky, 1967; PhD, University of Kentucky, 1969. Dr. Potoczny's interests include logic and number theory, specifically, novel methods of factoring large integers with a view to cracking various public key ciphersystems. Tel. 937-255-6565 x4282 (DSN 785-6565 x4282), email: [Henry.Potoczny@afit.edu](mailto:Henry.Potoczny@afit.edu).

**PYATI, VITTAL P.**, Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, (AFIT/ENG); BE, University of Madras, India, 1953; MSEE, Marquette University, 1962; PhD, Electrical Engineering, University of Michigan, 1966. Dr. Pyati's fields of expertise include electromagnetics, radar, low observables, and electronic warfare. Dr. Pyati has authored over 40 publications in journals and DOD Conferences. He has been a consultant to various Air Force organizations. Tel. 937-255-2024 (DSN 785-2024), email: [Vittal.Pyati@afit.edu](mailto:Vittal.Pyati@afit.edu).

**RAINES, RICHARD A.**, Director, Center for Cyberspace Research and Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1994 (AFIT/ENG), BSEE, Florida State University 1985; MS, Computer Engineering, Air Force Institute of Technology, 1987; PhD, Virginia Polytechnic Institute and State University, 1994. His research interests include computer communication networks, satellite communications, performance modeling, information security, and system threat and vulnerability. Tel. 937-255-6565 x4278 (DSN 785-6565 x4278), email: [Richard.Raines@afit.edu](mailto:Richard.Raines@afit.edu).

**RAQUET, JOHN F.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1998 (AFIT/ENG); BS, US Air Force Academy, 1989; MS, Massachusetts Institute of Technology, 1991; PhD, University of Calgary, Canada, 1998. Dr. Raquet's areas of interest include Global Positioning System (GPS) precise positioning, non-GPS precision navigation, optically-aided navigation, navigation using signals of opportunity, integration of MEMS-based inertial measurement units with other sensors, autonomous vehicle navigation and control, and electromagnetic interference and mitigation techniques affecting GPS performance. Tel. 937-255-3636 x4580 (DSN 785-3636 x4580), email: [John.Raquet@afit.edu](mailto:John.Raquet@afit.edu).

**SAVILLE, MICHAEL A., Maj**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG), BSEE, Texas A&M University, 1997; MSEE, Air Force Institute of Technology, 2000; PhD, University of Illinois at Urbana-Champaign, 2006. His research interests include synthetic aperture radar (SAR) imaging and inverse SAR imaging, radar signal processing, electromagnetic radiation and scattering phenomenology, computational electromagnetics, and electromagnetic theory. Tel. 937-255-3636 x4719 (DSN 785-3636 x4719), email: [Michael.Saville@afit.edu](mailto:Michael.Saville@afit.edu).

**SCHMIDT, JASON D., Capt**, Assistant Professor of Electro-Optics, Department of Electrical and Computer Engineering, AFIT, Appointment Date: 2006 (AFIT/ENG), BS in Physics, Marquette University 1998; MS in Physics 2000, The Ohio State University; PhD in Electro-Optics 2006, University of Dayton. Capt Schmidt's research interests include optical effects of atmospheric turbulence, adaptive optics, free-space optical communications, laser weapons, and optical modeling. He is a member of SPIE, OSA, and DEPS. Tel. 937-255-3636 x7224 (DSN 785-3636 x7224), e-mail: [Jason.Schmidt@afit.edu](mailto:Jason.Schmidt@afit.edu)

**SEETHARAMAN, GUNA S.**, Associate Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG); B.E. in Electronics & Communication Engineering, University of Madras, 1980; M. Tech. in Electrical Engineering, Indian Institute of Technology, 1982; PhD in Electrical and Computer Engineering, University of Miami, 1988. Dr. Seetharaman's areas of expertise are in integrated micro-systems, persistent and pervasive video surveillance, digital light processing, 3-D image displays, and hybrid CMOS / MEMS image sensors and micro-sensors. Tel. 937-255-3636 x4612 (DSN 785-3636 x4612), email: [Guna.Seetharaman@afit.edu](mailto:Guna.Seetharaman@afit.edu).

**STARMAN, LaVERN A., Maj**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2005 (AFIT/ENG); BSEE, University of Nebraska, Lincoln, 1994, MSEE, Wright State University, 1997; PhD, Air Force Institute of Technology, 2002. His areas of expertise include the design and fabrication of micro-electro-mechanical systems (MEMS) and microelectronics. He is a member of IEEE, Eta Kappa Nu, Sigma Xi and Tau Beta Pi. Tel. 937-255-3636 x4618 (DSN 785-3636 x4618), email: [LaVern.Starman@afit.edu](mailto:LaVern.Starman@afit.edu).

**TEMPLE, MICHAEL A.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1996 (AFIT/ENG); BSE, Southern Illinois University, 1985; MSE, Southern Illinois University, 1986; PhD, Air Force Institute of Technology, 1993. Dr. Temple's research interests include electromagnetic propagation phenomenology, Adaptive and Interferometric Clutter Erasure (ACE/ICE), High Range Resolution (HRR) radar, precision emitter location, digital and spread spectrum communications, and complex waveform generation and analysis. His sponsored research efforts in Command, Control, Communications and Intelligence (C3I), radar signal/signature processing, and Electronic Warfare (EW), as adopted by and/or transitioned to the DoD and other national agencies, has provided nearly \$1M in research and technology benefits. Tel. 937-255-6565 x4279 (DSN 785-6565 x4279), email: [Michael.Temple@afit.edu](mailto:Michael.Temple@afit.edu).

**TERZUOLI, ANDREW J. JR.**, Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1982 (AFIT/ENG); BS, Electrical Engineering, Polytechnic Institute of Brooklyn, 1969; MS, Electrical Engineering, Massachusetts Institute of Technology, 1970; PhD, Electrical Engineering, The Ohio State University, 1982. His research areas have included Antennas and Electromagnetics; Computer Model Based Studies; Application of Parallel Computation, VLSI Technology, and RISC Architecture to Numerical and Transform Methods; Remote Sensing & Communication; Passive RF Sensing; Wave Scattering, Radar Cross Section, and Stealth (LO/CLO) Technology; Machine Vision and Image Processing; Automated Object Recognition. He has published numerous reports and articles in journals and conference proceedings in these and related areas. His research is funded by various agencies including AFRL and NASIC. Prior to joining AFIT in 1982, Dr. Terzuoli was a research associate at the ElectroScience laboratory at the Ohio State University, and was a member of the technical staff at the Bell Telephone Laboratories in New Jersey. Tel. 937-255-3636 x4717 (DSN 785-3636 x4717), email: [Andrew.Terzuoli@afit.edu](mailto:Andrew.Terzuoli@afit.edu).

**THOMAS, RYAN W., Capt**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2007 (AFIT/ENG); BS, Engineering, Harvey Mudd College, 1999; MSCE, Air Force Institute of Technology, 2001; PhD, Computer Engineering, Virginia Tech, 2007. His research interests include cognitive networks, cognitive radio networks, wireless ad-hoc networks, game theoretic analysis and modeling, spectrum reuse, secondary users and distributed networking protocols and security. Tel. 937-255-3636 x4613 (DSN 785-3636 x4613), email: [Ryan.Thomas@afit.edu](mailto:Ryan.Thomas@afit.edu)

**TOUSSAINT, GREGORY J., Lt Col**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2007 (AFIT/ENG); BS Electrical Engineering, Cornell University, 1989; MS Systems Engineering, Air Force Institute of Technology, 1992; PhD, University of Illinois at Urbana-Champaign, 2000. His research interests include control theory, nonlinear systems, tracking, and estimation. Tel. 937-255-3636 x7257 (DSN 785-3636 x7257), email: [Gregory.Toussaint@afit.edu](mailto:Gregory.Toussaint@afit.edu)

**VASQUEZ, JUAN R., Lt Col**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG), BSEE, Oklahoma State University, 1987; MSEE, AFIT, 1992, PhD, AFIT, 1998. His research interests include stochastic estimation and control with an emphasis on target tracking. Tel. 937-255-3636 x4919 (DSN 785-3636 x4919), email: [Juan.Vasquez@afit.edu](mailto:Juan.Vasquez@afit.edu)

**VETH, MICHAEL J., Maj**, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG), BSEE, Purdue University, 1993; MSEE, Air Force Institute of Technology, 1994; PhD, Air Force Institute of Technology, 2006. His research interests include image-aided navigation, cooperative targeting and navigation, and bio-inspired systems. Tel. 937-255-3636 x7228 (DSN 785-3636 x4551), email: [Michael.Veth@afit.edu](mailto:Michael.Veth@afit.edu)

**WILLIAMS, PAUL D., Maj**, Chief, Computer Science and Computer Engineering Division, Deputy Director, Center for Cyberspace Research and Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2005 (AFIT/ENG), BS, University of Washington, 1996; MS, Air Force Institute of Technology, 2001; Ph.D., Purdue University, 2005, His research interests center on cyber operations, and include algorithms, artificial intelligence, and computer architecture. Tel. 937-6565x7253 (DSN 785-6565x7253), email: [Paul.Williams@afit.edu](mailto:Paul.Williams@afit.edu)

**DEPARTMENT OF ENGINEERING PHYSICS**

Access Phone 937-255-2012, DSN 785-2012

Fax: 937-656-6000, DSN 786-6000

Homepage: <http://www.afit.edu/en/enp/>

**ALLEY, THOMAS G., Lt Col**, Assistant Professor of Physics, Department of Engineering Physics, AFIT  
Appointment Date: 2003 (AFIT/ENP); BA, University of Utah, 1984; MS, Air Force Institute of Technology, 1987; PhD, University of New Mexico, 1998. Lt Col Alley's main research interests include nonlinear optics and laser devices. Specific application areas include nonlinear optical effects in glass and fibers and fiber lasers. He previously taught at the US and Argentine Air Force Academies and has conducted and managed research in nonlinear optics and solid state lasers at the Air Force Research Laboratory. He is an author of 10 archival publications, several technical reports, 17 presentations at technical conferences, and has 1 patent. He is a member of the Optical Society of America and Directed Energy Professional Society. Tel. 937-255-3636 x4649 (DSN 785-3636 x4649), email: [Thomas.Alley@afit.edu](mailto:Thomas.Alley@afit.edu).

**BAILEY, WILLIAM F.**, Associate Professor of Physics, Department of Engineering Physics, AFIT  
Appointment Date: 1978 (AFIT/ENP); BS, United States Military Academy, 1964; MS, The Ohio State University, 1966; PhD, Air Force Institute of Technology, 1978. Professor Bailey's research interests center on weakly ionized gases and reactive kinetics, with special applications to semiconductor processing in gas discharges, shock characterization in ionized flows and solutions of the inhomogeneous electron kinetic equation. Dr. Bailey has published over 20 papers in refereed conference proceedings and international journals and chaired over 25 theses and dissertations. He is a member of Tau Beta Pi, Sigma Pi Sigma, and Sigma Xi. Tel. 937-255-3636 x4501 (DSN 785-3636 x4501), email: [William.Bailey@afit.edu](mailto:William.Bailey@afit.edu)

**BOHN, MATTHEW J., Lt Col**, Assistant Professor of Physics, Department of Engineering Physics, AFIT  
Appointment Date: 2005 (AFIT/ENP); BS Physics, USAFA, 1988; MS Physics, 1993; PhD Optical Sciences, University of New Mexico, 1998. Lt Col Bohn's main research interests include ultrashort pulsed lasers, terahertz radiation and remote sensing. Specific application areas include compact monolithic femtosecond lasers for telecom and IR countermeasures; generation of high average power terahertz radiation in an air plasma; detecting voids and damage in fiber composite materials using terahertz radiation; passive remote sensing of Uranyl compounds using phase fluorimetry. He previously taught at the US Air Force Academies and has conducted research in chemical lasers, nonlinear optical devices, laser gyroscopes, mid-infrared lasers, solid state lasers and remote sensing applications at the Air Force Research Laboratory and other assignments. He has published 19 technical papers, reports and presentations. He is a member of the Optical Society of America and the IEEE. Tel. 937-255-3636 x4573 (DSN 785-3636 x4573), email: [matthew.bohn@afit.edu](mailto:matthew.bohn@afit.edu)

**BRIDGMAN, CHARLES J.**, Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, (AFIT/ENP); BS, United States Naval Academy, 1952; MS, North Carolina State University, 1958; PhD, North Carolina State University, 1963. Dr. Bridgman's interests center around nuclear weapon effects and military nuclear power applications. He has been associated with nuclear weapon defense since 1952. He was a member of the first military team to be operational on the H-bomb. His current research interest is nuclear weapon fallout modeling. He is the author of a text book "Introduction to the Physics of Nuclear Weapons Effects" and of numerous technical articles in a wide variety of journals. In his 38 years on the AFIT faculty, he has chaired over 120 MS theses and PhD dissertations. He has received several awards including Tau Beta Pi Teacher of the Year and the Gage H. Crocker Outstanding Professor Award. Dr. Bridgman is a Fellow of the American Nuclear Society. Tel. 937-255-3636 x4679 (DSN 785-3636 x4679), email: [Charles.Bridgman@afit.edu](mailto:Charles.Bridgman@afit.edu)

**BUNKER, DAVID J.**, Assistant Professor of Engineering Physics, Department of Engineering Physics, (AFIT/ENP); BS, Aerospace Engineering, Pennsylvania State University, 1984; MS, Mechanical Engineering, University of Dayton, 1988; PhD, Aerospace Engineering Sciences, University of Colorado, 1994. Dr Bunker's research interests include applications of measurement and signature technology, remote sensing, technical intelligence. Additional interests include high angle of attack and vertical flow structures, unsteady fluid dynamics, experimental wind tunnel testing, and low-speed fluid mechanics. Tel. 937-255-3636x4957 (DSN 785-3636x4957), email: [david.bunker@afit.edu](mailto:david.bunker@afit.edu)

**BURGGRAF, LARRY W.**, Professor of Engineering Physics and Chemical Physics, Department of Engineering Physics, AFIT Appointment Date: 1991 (AFIT/ENP); BA, Chemistry, Olivet Nazarene University, 1968; MS, Chemistry, Ohio State University, 1971; MA, Applied Mathematics, University of West Florida, 1977; PhD, Chemistry, University of Denver, 1981; Postdoctoral Associate, Computational Chemistry, Iowa State University, 1994. Dr. Burggraf conducts experimental and theoretical research in surface chemistry, surface spectroscopy and nuclear radiation spectroscopy to solve DoD and DOE problems in various areas including semiconductor materials; chemical, biochemical, and nuclear non-proliferation; radiation imaging; and nuclear fuels chemistry. Dr. Burggraf's research currently applies positron spectroscopy, gamma spectroscopy, photoluminescence spectroscopy, infrared spectroscopy, Raman spectroscopy, and atomic force microscopy to problems in solid state physics and problems in detection and non-proliferation of nuclear, chemical and biological weapons. Theoretical research to model surfaces and clusters centers on applying hybrid molecular mechanics / quantum mechanics models to predict structures, energies, spectroscopy and positron lifetimes. Dr. Burggraf has more than 30 publications. Tel. 937-255-3636 x4507 (DSN 785-3636 x4507), email: [Larry.Burggraf@afit.edu](mailto:Larry.Burggraf@afit.edu).

**CUSUMANO, SALVATORE J.**, Assistant Professor of Optical Engineering, Director of the Center for Directed Energy, AFIT Appointment Date: 2005 (AFIT/ENP); B.S. in Electrical Engineering, United States Air Force Academy, 1971; M.S. in Electrical Engineering, Air Force Institute of Technology, 1977; Ph.D. in Control Theory, University of Illinois, 1988. Dr. Cusumano's research interests are in Beam Control, Phased Arrays, Adaptive Optics, and Active Tracking and Pointing. He holds two patents, jointly, in Beam Control for Phased Arrays. Other interests include Beam Propagation, Radiometry and Remote Sensing. He is published in refereed archival journals and conference proceedings. He is a member of Eta Kappa Nu. Tel. 937-255-3636 x7294 (DSN 785-3636 x72944), email: [Salvatore.Cusumano@afit.edu](mailto:Salvatore.Cusumano@afit.edu).

**FIORINO, STEVEN T., Lt Col**, Assistant Professor of Atmospheric Physics, Department of Engineering Physics, AFIT Appointment Date: 2003 (AFIT/ENP); BS, Geography (Climatology), The Ohio State University, 1987; BS, Meteorology, Florida State University, 1989; MS, Atmospheric Dynamics, The Ohio State University, 1993; PhD, Physical Meteorology, Florida State University, 2002. Lt Col Fiorino's research interests include retrieval of environmental parameters via microwave remote sensing, development of signal processing algorithms to fuse meteorological data collection with non-weather ISR platforms, evaluating uncertainty in high-energy laser engagement due to atmospheric effects, and improving microphysical characterizations for nuclear fallout, transport, and dispersion. He has published broadly in meteorological, directed energy and military journals. Lt Col Fiorino is a member of the American Meteorological Society and additionally holds a Master of Military Operational Art and Science from Air University (2003). Tel. 937-255-3636 x4506 (DSN 785-3636 x4506), email: [Steven.Fiorino@afit.edu](mailto:Steven.Fiorino@afit.edu).

**GERTS, DAVID W., Maj**, Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2004 (AFIT/ENP); BS/BS, Michigan State University, 1994; MS, Air Force Institute of Technology, 1999; PhD, Air Force Institute of Technology, 2002. Capt Gerts's main research interests include neutral particle transport and computational physics. Specific application areas include nuclear detonation detection from satellites and computation of neutron and gamma ray cross sections. He previously led the research, development, and analysis branch for detecting world-wide nuclear detonations for the DoD and DoS. He is a member of the American Nuclear Society. Tel. 937-255-3636 x4571 (DSN 785-3636 x4571), email: [David.Gerts@afit.edu](mailto:David.Gerts@afit.edu)

**HENGHOLD, ROBERT L.**, Professor of Physics and Head, Department of Engineering Physics, AFIT Appointment Date: 1961 (AFIT/ENP); BA, Thomas More College, 1956; MS, University of Cincinnati, 1961; PhD, University of Cincinnati, 1965. Professor Hengehold's research areas center around experimental solid state physics, semiconductor physics, optical diagnostics and electron and laser spectroscopy. He is the author of over 100 archival publications and over 215 presentations at technical meetings. He has served as advisor on over 17 doctoral dissertations and 80 Master's theses. He is currently carrying out studies of (1) compound semiconductor materials and superlattice structures for mid-infrared diode lasers and detectors using hot electron spectroscopy, and (2) wide bandgap semiconductors for UV detectors using cathodo- and photo-luminescence. This work involves collaborative efforts with the Directed Energy and the Sensors Directorates of AFRL and the MIT Lincoln Laboratory. He has received the Air University Commander's Award for Faculty Achievement in 1982, the Gage H. Crocker Outstanding Professor Award in 1996, the Outstanding Professional Achievement Award from the Affiliate Society Council of the Engineering and Science Foundation of Dayton in 1997, and the General Bernard A. Schriever Award for 1999. Tel. 937-255-2012 (DSN 785-2012), email: [Robert.Hengehold@afit.edu](mailto:Robert.Hengehold@afit.edu)

**JOHN, GEORGE**, Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, (AFIT/ENP); BSc, Ohio State University, 1948; PhD, Ohio State University, 1952. Professor John's research areas are applications of nuclear radiation and radionuclides to problems in science and engineering. This includes applications of Mössbauer spectrometry to problems in materials sciences, analysis of radionuclides in the environment, development of nuclear radiation detectors and general techniques for detecting and analyzing nuclear radiation. Current research emphases are on applications of Mössbauer Spectrometry in the development of lubricants in collaboration with the Air Force Research Laboratory Materials Directorate at WPAFB. Other areas of interest are: the natural radiation background and health physics. Tel. 937-255-3636 x4837 (DSN 785-3636 x4837), email: [George.John@afit.edu](mailto:George.John@afit.edu)

**LAGRAFFE, DAVID A., LTC**, Assistant Professor of Engineering Physics, Department of Engineering Physics, AFIT Appointment Date: 2005 (AFIT/ENP); BS (Physics), Syracuse University 1985; PhD (Physics) Syracuse University 1990. Lieutenant Colonel LaGrafte's expertise is in experimental condensed matter physics. His past research has involved study of the growth, electronic, and magnetic properties of thin films, surfaces and interfaces. His current research interest lies in the interaction of radiation with matter, particularly the characterization and improvement of nuclear radiation detectors. He has published over 20 journal articles and is currently the advisor of one Master's and one Ph.D. student. He is class advisor for the 2008 Nuclear Engineering class. He is also Program Chair of AFIT's Combating Weapons of Mass Destruction Program. Tel. 937-255-3636 x7308 (DSN 785-3636 x7308), email: [david.lagraffe@afit.edu](mailto:david.lagraffe@afit.edu)

**McCRAE, JACK E., Jr., Col**, Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2006 (AFIT/ENP) and Senior Military Professor, Graduate School of Engineering and Management (AFIT/EN); BS, Massachusetts Institute of Technology, 1984; MS, Air Force Institute of Technology, 1993; PhD, Force Institute of Technology, 1997. Col McCrae's research interests include laser radars, laser devices, non-linear optics, and solid-state and semiconductor physics. Col McCrae has conducted and managed research in semiconductor, solid-state, fiber, and gas laser systems, laser applications, laser infrared countermeasures, non-linear optics, and laser radar systems at the Air Force Research Laboratory, the Defense Advanced Research Projects Agency, and other assignments. Tel. 937-255-3636 x7302 (DSN 785-3636 x7302), email: [Jack.McCrae@afit.edu](mailto:Jack.McCrae@afit.edu)

**MARCINIAK, MICHAEL A.**, Associate Professor of Engineering Physics, Department of Engineering Physics AFIT Appointment Date: 1999 (AFIT/ENP); BS, St. Joseph's College, 1981; BSEE, University of Missouri, 1983; MSEE, Air Force Institute of Technology, 1987; PhD, Air Force Institute of Technology, 1995. Professor Marciniak's research interests include opto-electronic material and device characterization for infrared countermeasure and counter-countermeasure applications. He has published 11 refereed and 22 other publications, and has chaired two PhD and 28 MS thesis committees. He is a retired Lt Col, USAF, with 22 years of service. Tel. 937-255-3636 x4529 (DSN 785-3636 x4529), email: [Michael.Marciniak@afit.edu](mailto:Michael.Marciniak@afit.edu)

**MATHEWS, KIRK A.**, Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 1987 (AFIT/ENP); BS, California Institute of Technology, 1971; MS, Air Force Institute of Technology, 1982; PhD, Air Force Institute of Technology, 1983. Dr. Mathews' research interests center on computational methods for neutral particle radiation transport and modeling and analysis of nuclear phenomena and measurements, including: enrichment cascade modeling, high altitude radiation transport, blast and shock, nuclear thermal radiation, deconvolution of radiation spectra, and statistical analysis of nuclear measurements. Dr. Mathews has published 14 papers in refereed journals and 16 conference proceedings, and has chaired 30 theses and 11 dissertations. He is a member of Tau Beta Pi. Tel. 937-255-3636 x4508 (DSN 785-3636 x4508), email: [Kirk.Mathews@afit.edu](mailto:Kirk.Mathews@afit.edu)

**NIDAY, THOMAS A., Capt**, Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2004 (AFIT/ENP); BS, Physics and Applied Mathematics, with honors, California Institute of Technology, 1997; MS, Applied Physics, distinguished graduate, Air Force Institute of Technology, 1999; MS, Optical Science, University of Arizona, 2002; PhD, Optical Science, University of Arizona, 2004. Capt Niday's research interests include modeling and simulation of the atmospheric propagation of ultrashort, high power laser pulses. Such pulses, or light filaments, have potential applications in remote sensing, adaptive optics, and electromagnetic discharge control. Other areas of interest include the exploitation of data from novel hyperspectral imaging sensors. Tel. 937-255-3636 x4828 (DSN 785-3636 x4828), email: [Thomas.Niday@afit.edu](mailto:Thomas.Niday@afit.edu)

**PERRAM, GLEN P.**, Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1989 (AFIT/ENP); BS, Cornell University, 1980; MS, Air Force Institute of Technology, 1981; PhD, Air Force Institute of Technology, 1986. Dr. Perram's research interests include high power chemical lasers, including the Chemical Oxygen-Iodine Laser and the Airborne Laser, infrared gas-phase lasers for counter-measure missions, reaction kinetics, atomic and molecular spectroscopy, environmental science, photochemistry, molecular dynamics, optical diagnostics, and remote sensing. He has advised 16 PhD and 28 MS students, received 22 research grants and published over 60 papers during his fifteen years on the AFIT faculty. Tel. 937-255-3636 x4504 (DSN 785-3636 x4504), email: [Glen.Perram@afit.edu](mailto:Glen.Perram@afit.edu)

**PETROSKY, JAMES C.**, Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2000 (AFIT/ENP); BA, (Engineering Physics/Computer Science) Millersville University of Pennsylvania, 1984; MS (Engineering Physics) Rensselaer Polytechnic Institute, 1992; PhD, (Engineering Physics) Rensselaer Polytechnic Institute, 1995. Dr. Petrosky has expertise in radiation effects on electronic devices, EMP, experimental design, radiation detection, and nuclear weapon effects. Dr. Petrosky's research spans narrow and wide band gap materials, using combinations of electrical, optical and absorption spectroscopy to gain information on the damaging effects of ionizing and non-ionizing radiation. Experimental techniques include: I-V(T), C-V(T), photoluminescence spectroscopy, Hall Effect, and Electron Spin Resonance spectroscopy (EPR); applications of measurement techniques in harsh environments/in-situ measurements and obtaining real-time data. Applications include electronic switches and actuators, RF/IR sensors, force transducers, and electronics controls for use in the space and nuclear weapons environment. Tel. 937-255-3636 x4562 (DSN 785-3636 x4562), email: [James.Petrosky@afit.edu](mailto:James.Petrosky@afit.edu)

**RIES, HEIDI R.**, Associate Professor of Physics, Department of Engineering Physics AFIT Appointment Date: 1999 (AFIT/ENP) and Dean for Research, Graduate School of Engineering and Management (AFIT/ENR) BS, Physics, The Ohio State University, 1982; MS, Physics, The Ohio State University, 1984; PhD, Applied Physics, Old Dominion University, 1987. Dr. Ries' research interests include nonlinear optical materials, electron paramagnetic resonance spectroscopy, and laser processing of materials. Prior to joining the AFIT faculty, Dr Ries served as Director of the Center for Materials Research at Norfolk State University in Norfolk, VA and as Associate Director of the Applied Research Center at the Jefferson Center for Research and Technology Research Park, Newport News, VA. Tel. 937-255-3636, x4544 (DSN 785-3636, x4544), email: [Heidi.Ries@afit.edu](mailto:Heidi.Ries@afit.edu)

**ROH, WON B.,** Professor of Engineering Physics, Department of Engineering Physics, AFIT Appointment Date: 1979 (AFIT/ENP); BS, Seoul National University, 1964; MS, The Ohio State University, 1968; PhD, The Ohio State University, 1973. Professor Roh's research interests span technology areas covering lasers, optics, laser spectroscopy, and nonlinear optics. The applications of the technology areas include laser phasing, beam cleanup and combining, Raman fiber lasers, image processing, phase conjugation, frequency conversion, and optical diagnostics. Professor Roh's research is currently funded by the Directed Energy Directorate of the Air Force Research Laboratory. He has advised 7 PhD and almost 50 MS students during his 26 years on AFIT faculty and published about 50 papers. He is the recipient of the Gage H. Crocker Outstanding Professor Award.

**RUSSELL, TIMOTHY H., Maj,** Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2005 (AFIT/ENP); BA, United States Air Force Academy, 1995; MS, University of Arizona, 1996; PhD, Air Force Institute of Technology, 2001. Maj Russell's research interests include nonlinear optics and fiber laser devices. Specific areas include coherent phasing of fiber amplifiers, phase conjugation, and stimulated Brillouin scattering. He has previously conducted and managed research into munition guidance using laser radar and high-power, solid-state laser systems. Maj Russell is a member of the Optical Society of America and Tau Beta Pi. Tel. 937-255-3636 x7298 (DSN 785-3636 x7298), email: [Timothy.Russell@afit.edu](mailto:Timothy.Russell@afit.edu).

**SMITHTRO, CHRISTOPHER G., Lt Col,** Assistant Professor of Atmospheric Physics, Department of Engineering Physics, AFIT Appointment Date: 2004 (AFIT/ENP); B.S., Harvey Mudd College, 1991; M.S., Air Force Institute of Technology, 1999; Ph.D., Utah State University, 2004. Lt Col Smithtro's research interests include modeling of the ionosphere and thermosphere, and the transition of basic science results into operational space weather models. He has worked as a space weather forecaster and liaison officer to the NOAA Space Weather Prediction Center as well as a weather station commander. He is a member of the American Geophysical Union. Tel. 937-255-3636 x4505 (DSN 785-3636 x4505), email: [Christopher.Smithtro@afit.edu](mailto:Christopher.Smithtro@afit.edu).

**TUTTLE, RONALD F.,** Associate Professor of Nuclear Engineering and Chair, Measurement and Signature Intelligence (MASINT) Technologies, Department of Engineering Physics, AFIT Appointment Date: 2001 (AFIT/ENP); BS, Chemical Engineering, University of Missouri (Columbia), 1968; MS, Nuclear Engineering, University of Missouri (Columbia), 1970; PhD, Nuclear Engineering, University of Missouri (Columbia), 1980. Dr. Tuttle's research areas are applications of active and passive remote sensing, spectroscopy, diagnostics, and signals processing to problems in intelligence collection and exploitation. Other areas of interest are nuclear weapon effects and space nuclear power systems modeling and mechanics of aerosols. He has published in both unclassified and classified refereed archival journals and conference proceedings. Tel. 937-255-3636 x4536 (DSN 785-3636 x4536), email: [Ronald.Tuttle@afit.edu](mailto:Ronald.Tuttle@afit.edu)

**WEEKS, DAVID E.,** Professor of Physics, Department of Engineering Physics AFIT Appointment Date: 1993 (AFIT/ENP); BA Physics with honors, Colgate University, 1983; MS, Physics, Georgia Institute of Technology, 1985; PhD, Physics, University of Arkansas, 1989. Dr. Weeks' research interests include the development of time dependent wave packet methods to model the quantum mechanics of simple chemical reactions and to compute associated state to state reactive scattering matrix elements. A second area of interest centers on the application of k.p theory together with the envelope function approximation to model the electronic and optical properties of quantum well heterostructures. Tel. 937-255-3636 x4561 (DSN 785-3636 x4561), email: [David.Weeks@afit.edu](mailto:David.Weeks@afit.edu)

**WOLF, PAUL J.,** Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1994 (AFIT/ENP); and Associate Dean for Academic Affairs, Graduate School of Engineering and Management, (AFIT/EN); BS, Regis College, 1978; MS, Air Force Institute of Technology, 1979; PhD, Air Force Institute of Technology, 1985. Dr. Wolf's research interests are concentrated in experimental atomic/molecular spectroscopy, reactive and non-reactive collision kinetics, thin film deposition processes by laser with applications toward laser devices, ionospheric and atmospheric chemistry, environmental monitoring, and thin film devices. He has published over 20 papers and advised two PhD and five MS students. Tel. 937-255-3636 x4560 (DSN 785-3636 x4560), email: [Paul.Wolf@afit.edu](mailto:Paul.Wolf@afit.edu)

**YEO, YUNG KEE**, Professor of Physics, Dept of Engineering Physics, AFIT Appointment Date: 1984 (AFIT/ENP); BS, Seoul National University, 1961; PhD, University of Southern California, 1972. Professor Yeo's research interests are in the area of solid state physics, especially characterization of the electrical, magnetic, and optical properties of elemental, compound, ternary, and quaternary semiconductors using techniques such as Hall effect measurement, deep level transient spectroscopy, superconducting quantum interference device, magnetic circular dichroism, cathodoluminescence, and photoluminescence. Professor Yeo has published about 100 articles in archival journals, several technical reports, presented about 190 papers at professional conferences, and holds one patent. He is a reviewer for the Applied Physics Letters and the Journal of Applied Physics. He is currently funded by the AFOSR to study wide band gap semiconductors such as GaN, AlGaIn, and ZnO including dilute magnetic semiconductors. This work involves collaborative effort with the Air Force Research Laboratory and Rutgers University. He has directed the research of five post-doc fellows, sixteen PhD students and twenty MS students. He received the Ezra Kotcher Award for 1990, received the Gage H. Crocker Outstanding Professor Award for 1992, and received General Bernard A. Schriever Award for 1997. Tel. 937-255-3636 x4532 (DSN 785-3636 x4532), email: [Yung.Yeo@afit.edu](mailto:Yung.Yeo@afit.edu)

**DEPARTMENT OF MATHEMATICS AND STATISTICS**

Access Phone: 937-255-3098, DSN 785-3098

Fax: 937-656-4413, DSN 986-4413

Homepage: <http://www.afit.edu/en/enc/>

**ABRAMSON, MARK A., Lt Col**, Associate Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2002 (AFIT/ENC); BS, Brigham Young University, 1987; MS (2), Air Force Institute of Technology, 1994; MA, Rice University, 2001; PhD, Rice University, 2002. Lt Col Abramson's research interests include optimization and numerical analysis, particularly as applied to engineering design problems. His recent research has focused primarily on direct search algorithms for solving nonlinear and mixed variable programming problems. Lt Col Abramson's previous military assignments have been in test and evaluation, logistics policy analysis, and computer simulation and analysis of war plans. Tel. 937-255-3636 x4524 (DSN 785-3636 x4524), email: [Mark.Abramson@afit.edu](mailto:Mark.Abramson@afit.edu)

**BAKER, WILLIAM P.**, Associate Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1994 (AFIT/ENC); BA, University of California at Irvine, 1969; MA, University of California at Irvine, 1970; PhD, Northwestern University, 1987. Dr. Baker's research interests include asymptotic and perturbation methods, wave propagation and scattering theory, applied mathematics, functional analysis, low observables, and numerical analysis. Dr. Baker's current research is in acoustical and electromagnetic scattering, and vibrational dynamics of composite sandwich material. His recent papers are on fractional derivative models of viscoelastic materials. Dr. Baker is a Master Navigator with prior military assignments in flight test, satellite communications, cruise missile and radar analysis. Tel. 937-255-3636 x4517 (DSN 785-3636 x4517), email: [William.Baker@afit.edu](mailto:William.Baker@afit.edu).

**BARR, DAVID R.**, Associate Professor Emeritus of Statistics, Department of Mathematics and Statistics, (AFIT/ENC); BA, Miami University, 1954; MA, Miami University, 1954; MS, Miami University, 1957; PhD, State University of Iowa, 1964. Dr. Barr's research interests include probability, statistics and stochastic processes, as well as the design of experiments.

**BULUTOGLU, DURSUN A.**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004, (AFIT/ENC); BS, University of Maryland at College Park, 1996; PhD, University of California, Berkeley, 2001. Dr. Bulutoglu's research interests include design of experiments and combinatorial problems in statistics. His papers are on optimization algorithms for finding  $E(s^2)$  optimal supersaturated designs. More recently he has also worked on enumerating all non-isomorphic orthogonal arrays by using integer programming. Tel. 937-255-3636 x4704 (DSN 785-3636 x4704), email: [Dursun.Bulutoglu@afit.edu](mailto:Dursun.Bulutoglu@afit.edu)

**BUNCK, BENJAMIN F.**, Visiting Assistant Professor of Mathematics, Department of Mathematics and Statistics, (AFIT/ENC); BS, University of Kansas, 1999; MS, Wichita State University 2001; PhD, Wichita State University, 2004. Dr. Bunck's current research interests include numerical analysis, numerical partial differential equations, and spectral methods in partial differential equations.

**BUSH, BRETT A., Maj**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2006, (AFIT/ENC); BS, United States Air Force Academy, 1997; MBA, Louisiana Tech University, 1999; MS, Northeastern University, 2002; PhD, North Carolina State University, 2006. Maj Bush's research interests include nonlinear optimization and applied statistics. His previous military assignments have been in nuclear weapons test and evaluation; and modeling, simulation, and analysis of C4ISR systems. Tel. 937-255-3636 x7125, email: [Brett.Bush@afit.edu](mailto:Brett.Bush@afit.edu).

**CRITTENDEN, PAUL E.**, Visiting Assistant Professor of Mathematics, Department of Mathematics and Statistics, (AFIT/ENC); BS, Mechanical Engineering, University of Nebraska at Lincoln, 1992; MS, Engineering Mechanics, University of Nebraska at Lincoln, 1995; PhD, Mathematics, University of Nebraska at Lincoln. Dr. Crittenden's research interests include scattering of electromagnetic waves, heat transfer, design of experiments, applied mathematics, asymptotic and perturbation methods and numerical analysis.

**DILLARD, KAREN E. M., Maj**, Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2007, (AFIT/ENC); BS, Rensselaer Polytechnic Institute, 1994; MS, University of Massachusetts - Lowell, 1997; PhD, North Carolina State University, 2007. Maj Dillard's research interests include numerical analysis and optimization. She was previously assigned as a personnel officer, instructor at USAFA, and scientific analyst involved with analysis of alternatives. Tel. 937-255-3636 x4522, email: [Karen.Dillard@afit.edu](mailto:Karen.Dillard@afit.edu)

**DUCKRO, DONALD E., Lt Col**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004 (AFIT/ENC); BChE, University of Dayton, 1984; BS, Louisiana Tech University, 1986; MS, University of Dayton, 1990; PhD, Air Force Institute of Technology, 1999. Lt Col Duckro's research interests include decision theory, particularly as applied to planning and programming; and statistical evaluation of neural networks. His recent research has focused primarily on capacity analysis for Base Realignment and Closure. Lt Col Duckro's previous military assignments involve satellite development, aircraft acquisition, a joint cross-service group for BRAC, and faculty positions at USAFA and NPS. Tel. 937-255-3636 x3320 (DSN 785-3636 x3320), email: [Donald.Duckro@afit.edu](mailto:Donald.Duckro@afit.edu)

**FICKUS, MATTHEW C.,** Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004, (AFIT/ENC); BS, University of Maryland, Baltimore County, 1995; MS, University of Maryland, Baltimore County, 1997; PhD, University of Maryland, College Park, 2001. Dr. Fickus' research interests include pure and applied harmonic analysis, Fourier series, wavelets and frames. Tel. 937-255-3636 x4513 (DSN 785-3636 x4513), email: [Matthew.Fickus@afit.edu](mailto:Matthew.Fickus@afit.edu)

**KAZISKA, DAVID M., Maj**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2005 (AFIT/ENC); BS, Gannon University, 1987; MA, University of Pittsburgh, 1989; JD, University of Pittsburgh School of Law, 1994; PhD, Florida State University, 2005. Capt Kaziska's research interests are statistical shape analysis with application to gait recognition, and human detection in images beyond the visual spectrum. In his previous military assignments, he worked in ASC/XR at Wright-Patterson, conducting a concept call addressing future Air Force Special Operations technology needs. He was later assigned to the 422 Test and Evaluation Squadron at Nellis AFB, NV, where he worked as an analyst supporting A-10, F-15E and F-16 operational tests. Tel. 937-255-3636 x7124 (DSN 785-3636 x7124), email: [David.Kaziska@afit.edu](mailto:David.Kaziska@afit.edu)

**LAIR, ALAN V.,** Professor of Mathematics and Head, Department of Mathematics and Statistics, AFIT Appointment Date: 1982, (AFIT/ENC); BA, North Texas State University, 1970; MS, Texas Tech University, 1972; PhD, Texas Tech University, 1976. Dr. Lair's research interests include parabolic and elliptic partial differential equations, functional analysis, applied mathematics, and nonlinear diffusion. Dr. Lair has published several papers on the properties of solutions of various nonlinear equations. Tel. 937-255-3636 x4519 (DSN 785-3636 x4519), email: [Alan.Lair@afit.edu](mailto:Alan.Lair@afit.edu)

**NEHER, ROBERT E. JR., Lt Col**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004 (AFIT/ENC); BS, Purdue University, 1989; MS, Air Force Institute of Technology, 1996; PhD, The Florida State University, 2004. Maj Neher's research interests include reliability and maintainability from a statistical view point, and image analysis, particularly hyperspectral imagery. Maj Neher's previous military assignments have been in missile operations, test and evaluation, and weapons analysis. Tel. 937-255-3636 x4526 (DSN 785-3636 x4526), email: [Robert.Neher@afit.edu](mailto:Robert.Neher@afit.edu)

**NOVAK, KYLE A., Maj**, Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2006. (AFIT/ENC); BS, University of Wisconsin-Madison, 1993; MA, University of Wisconsin-Madison, 1995; PhD, University of Wisconsin-Madison, 2006. Maj Novak's research interests include numerical methods for high frequency limits of quantum phenomena. Maj Novak's previous military assignments have been in research and development, signals intelligence, and operational testing. Tel. 937-255-3636 x4635, email: [Kyle.Novak@afit.edu](mailto:Kyle.Novak@afit.edu)

**OXLEY, MARK E.,** Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1987 (AFIT/ENC), and Researcher, Sensor Fusion Laboratory, Center for Operational Analysis (COA); BS, Cumberland College, 1978; MS, Purdue University, 1980; PhD, North Carolina State University, 1987. Dr. Oxley's research interests include partial differential equations, free and moving boundary value problems, finite time extinction problems, functional analysis, optimization, artificial neural networks, groundwater modeling, wavelet analysis, classifier fusion, sensor fusion and evaluation of fusion techniques, receiver operating characteristic (ROC) curves. Dr. Oxley's recent research is funded by AFOSR, AFRL/SN, and ACC/DR to work on fusion of ATR systems. Several of his students have written theses and dissertations on optimal remediation of pump-and-treat systems, binaural listening, measuring the capability of artificial neural networks and most recently the fusion of multiple classifiers, the theory of data fusion using category theory. Tel. 937-255-3636 x4515 (DSN 785-3636 x4515), email: [Mark.Oxley@afit.edu](mailto:Mark.Oxley@afit.edu)

**QUINN, DENNIS W.,** Professor Emeritus of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1974, (AFIT/ENC); BA, Mathematics, University of Delaware, 1969; MS, Applied Mathematics, University of Delaware, 1971; PhD, Applied Mathematics, University of Delaware, 1973. Dr. Quinn's fields of expertise include numerical methods, finite elements, finite differences, integral equation methods, numerical analysis, functional analysis, system identification, and applied mathematics. Dr. Quinn has advised several MS students in modeling toxic chemical exposure. Dr. Quinn has published papers dealing with integral and finite element solutions of acoustic problems, using the telegrapher's equation to model lightning, using the method of characteristics in cancer risk assessment, using the diffusion equation to model diffusion through the skin in pharmacokinetic modeling, and using the boundary element method for moving boundary problems. Tel. 937-255-3636 x4522 (DSN 785-3636 x4522), email: [Dennis.Quinn@afit.edu](mailto:Dennis.Quinn@afit.edu)

**REYNOLDS, DANIEL E.,** Assistant Professor Emeritus of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 1974, (AFIT/ENC); AB, University of Rochester, 1965; MS, Air Force Institute of Technology, 1971; MS, Wright State University, 1983. Professor Reynolds' research interests include management cybernetics, learning theory, and exploring ways computer graphics can support statistical and mathematical education. In 1989, Professor Reynolds received Tau Beta Phi's Outstanding Professor Award.

**SUZUKI, LAURA R. C., Maj,** Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2003, (AFIT/ENC); BS, Wilkes College, 1983; MS, Air Force Institute of Technology, 1984; PhD, Air Force Institute of Technology, 1998. Maj Suzuki's research interests include wavelet analysis, functional analysis, applied mathematics, and artificial neural networks.

**SWIM, EDWARD W.,** Visiting Assistant Professor of Mathematics, Department of Mathematics and Statistics, (AFIT/ENC); BS, Angelo State University, 1994; MS, Colorado School of Mines, 1999; PhD, Texas Tech University, 2005. Dr. Swim's current research interests include numerical analysis, computational biomechanics, and mathematical modeling of biological and physical systems.

**THORSEN, STEVEN N., Maj,** Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2005, (AFIT/ENC); BA, Florida Atlantic University, 1991; MA, East Carolina University, 1997; PhD, AFIT, 2005. Maj Thorsen's research interests include receiver operating curves, vector space and variational calculus optimization methods, category theory, information fusion, and measure theory. Maj Thorsen's previous military assignments involve operations planning, test and acquisition, and faculty at USAFA. Tel. 937-255-3636 x4584 (DSN 785-3636 x4584), email: [Steven.Thorsen@afit.edu](mailto:Steven.Thorsen@afit.edu)

**WEBB, TIMOTHY S., Maj,** Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2002 (AFIT/ENC); BS, United States Air Force Academy, 1988; MS, Air Force Institute of Technology, 1994; PhD, University of Colorado Health Sciences Center, 2003. Maj Webb's research interests include biostatistics, categorical data analysis, and design of experiments.

**WHITE, EDWARD D., III**, Associate Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 1998 (AFIT/ENC); BS, University of Tampa, 1990; MAS, Ohio State University, 1991; PhD, Texas A&M University, 1998. Dr. White's research interests include design of experiments, categorical data analysis, biostatistics, and model building. Tel. 937-255-3636 x4540 (DSN 785-3636 x4540), email: [Edward.White@afit.edu](mailto:Edward.White@afit.edu)

**WOOD, AIHUA W.**, Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1994 (AFIT/ENC); BS, Beijing University, 1984; MS, University of Connecticut, 1988; PhD, University of Connecticut, 1990. Dr. Wood's research interests include elliptic partial differential equations, and electromagnetic wave propagation. Tel. 937-255-3636 x4272 (DSN 785-3636 x4272), email: [Aihua.Wood@afit.edu](mailto:Aihua.Wood@afit.edu)

**WRIGHT, SAMUEL A., Maj**, Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004 (AFIT/ENC); BS, United States Air Force Academy, 1989; MS, Air Force Institute of Technology, 1995; PhD, Air Force Institute of Technology, 2001. Maj Wright's research interests include statistics, gait recognition, model validation, and pattern recognition. Tel. 937-255-3636 x4549 (DSN 785-3636 x4549), email: [Samuel.Wright@afit.edu](mailto:Samuel.Wright@afit.edu)

**DEPARTMENT OF OPERATIONAL SCIENCES**

Access Phone: 937-255-2549, DSN 785-2549

Fax: 937-656-4943 DSN 986-4943

Homepage: <http://www.afit.edu/en/ens/>

**ANDERSON, BRADLEY E., Lt Col**, Assistant Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2002 (AFIT/ENS); Center for Operational Analysis (COA), BS, Meteorology, University of Wisconsin - Madison, 1990; MS, Logistics Management, Air Force Institute of Technology, 1996; MB, Business, Indiana University – Bloomington, 2002; PhD, Business, Indiana University - Bloomington, 2002. Maj Anderson's research interests include repairable inventory management, mixed integer programming, network models, supply chain management, and evolutionary algorithms. Tel. 937-255-3636 x4646 (DSN 785-3636 x4646), email:

[Bradley.Anderson@afit.edu](mailto:Bradley.Anderson@afit.edu)

**BAUER, KENNETH W., Jr.**, Professor of Operations Research, Dept of Operational Sciences, AFIT Appointment Date: 1996 (AFIT/ENS); Center for Operational Analysis (COA), BS, Miami University (Ohio), 1976; MEA, University of Utah, 1980; MS, Air Force Institute of Technology, 1981; PhD, Purdue University, 1987. Dr. Bauer's research interests include the statistical aspects of simulation, design of experiments, neural networks, and multivariate statistics. Tel. 937-255-6565 x4367 (DSN 785-6565 x4367), email: [Kenneth.Bauer@afit.edu](mailto:Kenneth.Bauer@afit.edu)

**BREWER, BARRY L., Maj**, Assistant Professor of Logistics Management, Department of Operational Sciences, Appointment Date: 2005 (AFIT/ENS); BS, United States Air Force Academy, 1991; MS, Air Force Institute of Technology, 1995; PhD, Arizona State University, 2005. Maj Brewer's research interests include supply chain management, outsourcing, acquisition logistics, procurement, new product design, logistics and supply chain integration. Tel. 937-255-3636 x7946 (DSN 785-3636 x7946), email:

[Barry.Brewer@afit.edu](mailto:Barry.Brewer@afit.edu)

**CHRISSIS, JAMES W.**, Associate Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 1987 (AFIT/ENS); BS, University of Pittsburgh, 1975; MS, Virginia Polytechnic Institute and State University, 1977; PhD, Virginia Polytechnic Institute and State University, 1980. Dr. Chrissis' research interests include engineering optimization, mathematical programming, simulation, stochastic systems, and industrial engineering. Dr. Chrissis has been a member of the faculties of Virginia Tech and the University of South Florida. He is a member of the Institute for Operations Research and Management Sciences (INFORMS), The Society for Industrial and Applied Mathematics (SIAM), the Military Operations Research Society (MORS), The American Institute for Aeronautics and Astronautics (AIAA), and Sigma Xi. Tel. 937-255-3636 x4606 (DSN 785-3636 x4606), email:

[James.Chrissis@afit.edu](mailto:James.Chrissis@afit.edu)

**COCHRAN, JEFFERY K.**, Professor of Operations Research and Head, Department of Operational Sciences, AFIT Appointment Date: 2007 (AFIT/ENS); BSE, Purdue University, 1973; MSNE, Purdue University, 1976; MSIE, Purdue University, 1982; PhD, Purdue University, 1984. Dr. Cochran's research interests include applied probability, queuing and queuing networks, and heuristic optimization of stochastic models particularly in high technology entity flow systems. Tel. 937-255-3636 x4521 (DSN 785-3636 x4521), email: [Jeffery.cochran@afit.edu](mailto:Jeffery.cochran@afit.edu)

**COOPER, MARTHA C.**, IPA, Visiting Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Math/Computer Science, Purdue University, 1968; MS Industrial Administration, Purdue University, 1968; Ph.D., Business (Marketing, Logistics), The Ohio State University, 1982. Professor Cooper's research interests include supply chain management, partnership and other inter-firm relationships, the role of customer service in corporate strategy, international logistics, and career patterns of women in logistics. She has co authored three books, Customer Service: A Management Perspective, Partnerships in Providing Customer Service: A Third Party Perspective, and Strategic Planning for Logistics. Professor Cooper has over one hundred publications, including two best paper awards. Tel. 937-255-3636 x4708 (DSN 785-3636 x4708), email:

[Martha.cooper@afit.edu](mailto:Martha.cooper@afit.edu)

**CUNNINGHAM, WILLIAM A., III**, Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 1994 (AFIT/ENS); BS, Business Administration, Missouri Southern State College, 1976; MS, Economics, Oklahoma State University, 1979; PhD, Economics, University of Arkansas, 1986. Dr. Cunningham's research interests include transportation, strategic mobility, activity-based costing, lean, six sigma, theory of constraints, logistics management, public policy analysis, privatization, third-party logistics, international logistics, and international trade. Tel. (937) 255-6565 x4283 (DSN 785-6565 x4283), email: [William.Cunningham@afit.edu](mailto:William.Cunningham@afit.edu).

**DECKRO, RICHARD F.**, Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 1994 (AFIT/ENS); BSIE, State University of New York at Buffalo, 1972; MBA, Kent State University, 1973; DBA, Kent State University, 1976. Dr. Deckro's research and consulting interests are in the areas of information operations, applied mathematical programming and optimization, campaign planning, stabilization and reconstruction, scheduling, network models, project management, engineering management, technology selection and management, and multi-criteria decision making. He is the Editor of *Military Operations Research* and Area Editor for Service Systems for *Computers & Industrial Engineering*. Tel. 937-255-6565 x4325 (DSN 785-6565 x4325), <http://en.afit.edu/ens/deckro/>, email: [Richard.Deckro@afit.edu](mailto:Richard.Deckro@afit.edu).

**DONOVAN, PAMELA, Lt Col**, Assistant Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Kent State University, 1986; MS, Air Force Institute of Technology, 1996; PhD, University of Maryland, 2006. Lt Col Donovan's research interests include inventory modeling, distribution processes, supply chain integration, and transportation. Tel. 937-255-3636 x4510 (DSN 785-3636 x4510), email: [Pamela.donovan@afit.edu](mailto:Pamela.donovan@afit.edu)

**GRIFFIS, STANLEY E., Lt Col**, Assistant Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2007 (AFIT/ENS); BA, History, Assumption College, 1988; MS, Logistics Management, Air Force Institute of Technology, 1996; PhD, Business Administration, The Ohio State University, 2001. Lt Col Griffis' research interests include logistics performance measurement, lean agile and leagile supply chain strategies, and social networks in supply chain management. Tel. 937-255-3636 x4533 (DSN 785-3636 x4533), email: [Stanley.griffis@afit.edu](mailto:Stanley.griffis@afit.edu)

**HALL, SHANE N., Maj**, Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Mathematics, Brigham Young University, 1997; MS, Operations Research, Air Force Institute of Technology, 2000; PhD, Industrial Engineering, University of Illinois at Urbana-Champaign, 2006. Maj Hall's research interests include linear and integer optimization, dynamic programming approximation algorithms and heuristics with applications to military and health care problems. Tel. 937-255-3636 x4264 (DSN 785-3636 x4624), email: [shane.hall@afit.edu](mailto:shane.hall@afit.edu)

**JOHNSON, ALAN W.**, Associate Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2004 (AFIT/ENS); Center for Operational Analysis (COA), BS, Mechanical Engineering, Montana State University, 1982; MS, Systems Management, Air Force Institute of Technology, 1989; PhD, Industrial and Systems Engineering, Virginia Polytechnic Institute and State University, 1996. Dr. Johnson's research interests include strategic mobility, discrete-event simulation, logistics management, reliability and maintainability, and discrete optimization and heuristics. Tel. 937-255-3636 x4703 (DSN 785-3636 x4703), email: [Alan.Johnson@afit.edu](mailto:Alan.Johnson@afit.edu).

**KHAROUFEH, JEFFREY P.**, Associate Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2001 (AFIT/ENS); BS, Ohio University, 1995; MS, Ohio University, 1997; PhD, Pennsylvania State University, 2001. Dr. Kharoufeh's primary research interest is the development and analysis of stochastic models in operations research. His application areas include reliability theory and modeling, maintenance optimization, and queuing systems.

**KINNEY, GARY W. Jr., Maj**, Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2005 (AFIT/ENS); Center for Operational Analysis (COA), BGS, Computer Science, University of Nebraska at Omaha, 1995; MS, Operational Analysis, Air Force Institute of Technology, 2000; Ph.D., Operations Research and Industrial Engineering, The University of Texas at Austin, 2005. Capt Kinney teaches courses in decision and risk analysis, multi-criteria decision making, integer programming and heuristic search methods. His research interests include decision and risk analysis, multi-criteria decision making, discrete optimization, large scale optimization and metaheuristics. Tel. 937-255-3636 x4601 (DSN 785-3636 x4601), email: [Gary.Kinney@afit.edu](mailto:Gary.Kinney@afit.edu).

**KNIGHTON, SHANE A., Maj**, USAF, Ph.D., Assistant Professor of Operations Research, Dept of Operational Sciences (AFIT/ENS); Center for Operational Analysis (COA), B.S. Aeronautical Engineering, US Air Force Academy, 1994; M.S. Operations Research, Air Force Institute of Technology, 1998; Ph.D. Operations Research, Arizona State University, 2005. Major Knighton teaches courses in quantitative decision making, decision analysis, and scheduling. His research interests include discrete optimization, network-flow models, heterogeneous scheduling, and design of experiments. Tel. 937-255-3636 x4575 (DSN 785-3636 x4575), email: [shane.knighton@afit.edu](mailto:shane.knighton@afit.edu)

**MATTIODA, DANIEL D., Maj**, Assistant Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2007 (AFIT/ENS); Center for Operational Analysis (COA), BS Professional Aeronautics, Embry Riddle Aeronautical University 1997; MS Logistics and Acquisition Logistics Management, Air Force Institute of Technology, 2002; PhD Business Administration; Concentration: Marketing/Supply Chain Management, The University of Oklahoma – Norman, 2007. Maj Mattioda's research interests include collaboration and flexibility in the supply chain; reverse logistics; international logistics; lean, agile, and leagile logistics; and using simulation to model supply chain processes. Tel. 937-255-3636 x7946 (DSN 785-3636 x7946), email: [Daniel.mattioda@afit.edu](mailto:Daniel.mattioda@afit.edu)

**MELOUK, SHARIF H.**, Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2003 (AFIT/ENS); BS, Oklahoma State University, 1993; MBA, Oklahoma State University, 1997; PhD, Texas A&M University, 2003. Dr. Melouk's research interests include discrete-event simulation, simulation optimization, and distributed simulation. He is a member of the Institute for Operations Research and the Management Sciences (INFORMS) and the Institute of Industrial Engineers (IIE).

**MILLER, JOHN O.**, Associate Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2002 (AFIT/ENS); Director, Center for Operational Analysis (COA), BS, United States Air Force Academy, 1980; MBA, University of Missouri at Columbia, 1983; MS, Air Force Institute of Technology, 1987; PhD, The Ohio State University, 1997. Dr. Miller's research interests include simulation, ranking and selection, combat modeling, and nonparametric statistics. Tel. 937-255-6565 x4326 (DSN 785-6565 x4326), email: [John.Miller@afit.edu](mailto:John.Miller@afit.edu).

**MOORE, JAMES T.**, Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 1998 (AFIT/ENS); Center for Operational Analysis (COA), BA, University of Colorado, 1974; MBA, University of Wyoming, 1978; MS, Air Force Institute of Technology, 1981; PhD, The University of Texas at Austin, 1988. Dr. Moore's research interests include optimization theory, integer programming, scheduling, heuristics, and mobility modeling. Tel. 937-255-3636 x4528 (DSN 785-3636 x4528), email: [James.Moore@afit.edu](mailto:James.Moore@afit.edu).

**OGDEN, JEFFREY A.**, Assistant Professor of Logistics Management, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Accounting. Weber State University, 1998; MBA with emphasis in Supply Chain Management, Arizona State University, 2000; PhD, Business Administration with emphasis in Supply Chain Management, Arizona State University, 2003. Dr. Ogden's research interests include strategic purchasing, supply base optimization, logistics management, quality management, e-marketplaces, RFID, and supply chain management. Tel. 937-255-3636 x4653 (DSN 785-3636 x4653), email: [Jeffrey.ogden@afit.edu](mailto:Jeffrey.ogden@afit.edu)

**PATTERSON, KIRK A., Maj**, Assistant Professor of Logistics Management, Department of Operational Sciences, AFIT Appointment Date: 2002 (AFIT/ENS); Center for Operational Analysis (COA), BS, Auburn University, 1985; MS, Auburn University, 1988; MS, Air Force Institute of Technology, 1997; PhD, University of Maryland, 2002. Maj Patterson's research interests include supply chain management, transportation, strategic mobility, and logistics information management systems. Tel. 937-255-3636 x4521 (DSN 785-3636 x4521), email:

**PERRY, MARCUS B.**, Assistant Professor of Operations Research, Dept of Operational Sciences, AFIT Appointment Date: 2004 (AFIT/ENS); BS, Southern Illinois University, 1998; MS, Southern Illinois University, 2000; PhD, Florida State University, 2004. Dr. Perry's research interests include empirical modeling and analysis, experimental design, response surface methods, simulation, and quality control. He is a member of ASQ and a professional member of INFORMS and IIE.

**ROESENER, AUGUST G., Maj**, Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, United States Air Force Academy, 1998; MS, The University of Florida, 2002; PhD, The University of Texas at Austin, 2006. Capt Roesener's research interests include linear and integer optimization, heuristics search algorithms, and experimental design. Tel. 937-255-3636 x4539 (DSN 785-3636 x4539), email: [august.roesener@afit.edu](mailto:august.roesener@afit.edu)

**WEIR, JEFFERY D., LtCol**, Assistant Professor of Operations Research, Interim Head Department of Operational Sciences, AFIT Appointment Date: 2002 (AFIT/ENS); Center for Operational Analysis (COA), Bachelors of Electrical Engineering, Georgia Institute of Technology, 1988; MAS, Embry Riddle Aeronautical University, 1992; MS, Air Force Institute of Technology, 1995; PhD, Georgia Institute of Technology, 2002. Lt Col Weir's research interests include large-scale optimization, mathematical programming and decision analysis. He is a member of the Institute for Operations Research and Management Science (INFORMS) and the Military Operations Research Society (MORS).

**ZALEWSKI, DANIEL J., Col**, Senior Military Professor, Department of Operational Sciences, AFIT Appointment Date: 2005 (AFIT/ENS); Center for Operational Analysis (COA), BS, United States Air Force Academy, 1983; MS, George Mason University, 1989; PhD, Air Force Institute of Technology, 1995. Colonel Zalewski's research interests include military modeling and simulation, process control, artificial intelligence, and neural networks. Tel. 937-255-3636 x4621 (DSN 785-3636 x4621), email: [Daniel.Zalewski@afit.edu](mailto:Daniel.Zalewski@afit.edu)

**DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT**

Access Phone: 937-255-2998, DSN 785-2998

Fax: 937-656-4699, DSN 986-4699

Homepage: <http://www.afit.edu/en/env/>

**BADIRU, ADEDEJI B.,** Professor and Head, Department of Systems & Engineering Management, AFIT Appointment Date: 2006 (AFIT/ENV); BS, Tennessee Technological University, 1979; MS, Tennessee Technological University, 1981; PhD, Industrial Engineering, University of Central Florida, 1984. Dr. Badiru's research interests include Project Modeling, Analysis, Management, and Control, Mathematical Modeling, Computer Simulation, Information Systems, and Economic Analysis. He is the author of several books and technical journals. Tel. 937-255-3636 x4799 (DSN 785-3636 x4799), email: [Adedeji.badiru@afit.edu](mailto:Adedeji.badiru@afit.edu).

**BARTCZAK, SUMMER E., Lt Col,** Assistant Professor of Information Resource Management, AFIT Appointment Date: 2002 (AFIT/ENV); BS, United States Air Force Academy, CO, 1986; MS of Information of Resource Management, Air Force Institute of Technology, Dayton, OH, 1990; Masters of Military Operational Art, Air Command and Staff College, Air University, Montgomery, AL, 1998; PhD in Management Information Systems, Auburn University, Auburn, AL, 2002. Lt Col Bartczak's research interests include information technology (IT)/knowledge management (KM) implementation and IT/KM strategy, innovation, and change. Tel. 937-255-3636 x4826 (DSN 785-3636 x4826), email: [Summer.Bartczak@afit.edu](mailto:Summer.Bartczak@afit.edu).

**BLECKMANN, CHARLES A.,** Associate Professor of Engineering and Environmental Management, Department of Systems and Engineering Management, AFIT Appointment Date: 1993 (AFIT/ENV); BA, Secondary Education (Biology), University of Evansville, 1967; MS, Biology, Incarnate Word College, 1971; PhD, Botany, University of Arizona, 1977. Dr. Bleckmann's research interests include water and wastewater analyses and treatment, hazardous waste identification and management, land treatment of wastes, groundwater remediation, biodegradation of organics, and fuels microbiology. Tel. 937-255-3636 x4721 (DSN 785-3636 x4721), email: [Charles.Bleckmann@afit.edu](mailto:Charles.Bleckmann@afit.edu).

**FASS, R. DAVID, Maj,** Instructor of Management; BS, Economics, University of New Mexico, 1989; MBA, University of New Mexico, 1993, PhD (A.B.D.), College of Business, Department of Management, New Mexico State University, 2007. His research interests include strategic management, organizational behavior, organizational development and change, government contracting, multilateral alliances ("constellations"), Austrian economics, prescriptive vs. descriptive research models, social network methods, structural equation modeling, transcendent goals, and enriching web-based learning. Tel. 937-255-3636 x4826 (DSN 785-3636 x4826), email: [robert.fass@afit.edu](mailto:robert.fass@afit.edu).

**GOLTZ, MARK N.,** Professor of Engineering and Environmental Management, Department of Systems and Engineering Management, AFIT Appointment Date: 1996 (AFIT/ENV); BS, Cornell University, 1972; MS, University of California, Berkeley, 1973; PhD, Environmental Engineering and Science, Stanford University, 1986. Dr. Goltz specializes in modeling the physical, chemical, and biological processes that affect the fate and transport of organic contaminants in the subsurface. He is also interested in the implementation and commercialization of innovative groundwater remediation technologies. Tel. 937-255-3636 x4638 (DSN 785-3636 x4638), email: [Mark.Goltz@afit.edu](mailto:Mark.Goltz@afit.edu).

**GRMAILA, MICHAEL R.,** Associate Professor of Information Resource Management, Department of Systems Engineering and Management, AFIT Appointment Date: 2004 (AFIT/ENV); Center for Cyberspace Research (CCR), BS, Texas A&M University, 1993; MS, Texas A&M University, 1995; PhD, Texas A&M University, 1999. Dr. Grimaila's research interests include information warfare; information operations; Information Assurance (IA) programs; IA risk management; IA resource allocation; IA metrics; data mining; and IA education, training, and awareness campaigns. Tel. 937-255-3636 x4800 (DSN 785-3636 x4800), email: [michael.grimaila@afit.edu](mailto:michael.grimaila@afit.edu)

**HALVERSON, KENT C., Lt Col**, Assistant Professor of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV); BS, Civil Engineering, U.S. Air Force Academy, 1990; MS, Civil Engineering, University of Illinois at Champaign-Urbana, 1995; and, PhD, Business Management, University of Florida, 2005. Lt Col Halverson's research interests include leadership, social network analysis and organizational behavior. Tel. 937-255-3636 x4709 (DSN 785-3636 x4709), email: [kent.halverson@afit.edu](mailto:kent.halverson@afit.edu).

**HEILMANN, SHARON, G., Maj**, Assistant Professor of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV); BS, Organizational Communication, Eastern Michigan University, 1988; MA, Organizational Communication, Ohio University, 1989; MS, Logistics Management, Air Force Institute of Technology, 1998; Master of Business, Indiana University-Bloomington, 2003; PhD, Organizational Behavior / Human Resource Management, Indiana University-Bloomington, 2005. Maj Heilmann's research interests include human resource management, sexual harassment and whistle-blowing, mentoring, and organizational turnover. Tel. 937-255-3636 x7395 (DSN 785-3636 x7395), email: [Sharon.Heilmann@afit.edu](mailto:Sharon.Heilmann@afit.edu).

**HEMINGER, ALAN R.**, Associate Professor, Department of Systems and Engineering Management, AFIT Appointment Date: 1994 (AFIT/ENV); BA, Philosophy, University of Michigan, 1966; MS, Educational Psychology, California State University at Hayward, 1978; PhD, Management Information Systems, University of Arizona, 1988. Dr. Heminger's research interests include information integration, strategic information management, computer supported group problem-solving, reengineering, and long-term access to information. Tel. 937-255-3636 x7405 (DSN 785-3636 x7405), email: [Alan.Heminger@afit.edu](mailto:Alan.Heminger@afit.edu).

**HICKS, MICHAEL J.**, Assistant Professor of Economics, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV). BS Economics, 1984, Virginia Military Institute, MA Economics, University of Tennessee, 1997, PhD. Economics, University of Tennessee, 1998. U.S. Army Command and General Staff College, 2003. Dr. Hicks' research interests include public finance, regional economics, non-market valuation techniques in environmental and infrastructure analysis. Tel. 937-255-3636 x4605 (DSN 785-3636 x4605), email: [Michael.Hicks@afit.edu](mailto:Michael.Hicks@afit.edu).

**HOLT, DANIEL T., Lt Col**, Assistant Professor of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2002 (AFIT/ENV); BS, Electrical Engineering, University of Louisville, 1989; MA, Human Resource Development, Webster University, 1993; MS, Air Force Institute of Technology, 1995; and, PhD, Management Auburn, 2002. Lt Col Holt's research interests include organizational change, organizational development, human resource management, and attitude measurement. Tel. 937-255-3636 x7396 (DSN 785-3636 x7396), email: [Daniel.Holt@afit.edu](mailto:Daniel.Holt@afit.edu).

**KEE, PATRICK D., Lt Col**, Instructor of Systems Design and Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2007 (AFIT/ENV); BA, Physics, University of Nebraska at Omaha, 1989; MS, Engineering Physics, Air Force Institute of Technology, 1994; Doctoral Candidate, Physics, Air Force Institute of Technology. Lieutenant Colonel Kee's research interests include applying software development paradigms, such as object-oriented design, to rapid product development of both hardware and software. Tel. 937-255-3636 x4648 (DSN 785-3636 x4648), email: [patrick.kee@afit.edu](mailto:patrick.kee@afit.edu)

**LEACH, SONIA E., Maj**, Instructor of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV); BS, Mathematics – Applied Analysis, The Pennsylvania State University, 1991; MS, Operations Research, Air Force Institute of Technology, 1997; Doctoral Candidate, Industrial Engineering, Arizona State University. Maj Leach's research interests include the role of modeling, simulation and analysis in the product development arena. Tel. 937-255-3636 x4796 (DSN 785-3636 x4796), email: [Sonia.Leach@afit.edu](mailto:Sonia.Leach@afit.edu).

**MCNUTT, ROSS T., Lt Col**, Assistant Professor of Systems Design and Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV); BS, Math and Physics, US Air Force Academy, 1987; MS, Aeronautical and Astronautical Engineering Massachusetts Institute of Technology, 1992; MS Technology and Policy, Mass Inst of Tech, 1992; PhD, Technology Management and Policy, Mass Inst of Tech, 1998. Research interests include defense product development, product development cycle time reduction, technology development and application, lean aerospace initiative, Cost of Delay analysis, schedule based tools and incentives, and project portfolio management practices.

**MUCZYK, JAN P.**, Professor Emeritus of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2001 (AFIT/ENV). BS, MBA, and DBA, University of Maryland in Management and Organizational Behavior. Dr. Muczyk's research interests include leadership, streamlining bureaucracies, and strategy implementation. Tel. 937-255-3069 (DSN 785-3069).

**PEACHEY, TODD A., Maj**, Assistant Professor of Information Resource Management. BS in Finance, Penn State, 1992; MS of Information of Resource Management, Air Force Institute of Technology, Dayton, OH, 1998; Major Peachey's research interests include information systems security and knowledge management. Tel. 937-255-3636 x7391 (DSN 785-3636 x7391), email: [todd.peachey@afit.edu](mailto:todd.peachey@afit.edu)

**REHG, MICHAEL T.**, Assistant Professor of Management; BS, Wildlife Management, University of Wyoming, 1980; MS, Logistics Management, AFIT, 1990; PhD, Strategic Management, Indiana University, 1998. Interests include organizational change, organizational culture, organizational learning, training effectiveness, measurement scales and survey development. Tel. 937-255-3636 x4574 (DSN 785-3636 x4574), email: [Michael.Rehg@afit.edu](mailto:Michael.Rehg@afit.edu)

**SHELLEY, MICHAEL L.**, Professor of Environmental Science and Engineering, Department of Systems and Engineering Management, AFIT Appointment Date: 1996 (AFIT/ENV); BCE (Civil Engineering), Auburn University, 1974; MS (Environmental Engineering), Virginia Tech, 1975; PhD, Environmental Science and Engineering, University of North Carolina, 1985. Dr. Shelley focuses on system dynamics modeling in analyzing long-term management strategies. His research interests include abiotic and biochemical contaminant fate and transport, physiologically-based pharmacokinetic modeling, and ecological engineering design to optimize mission activity with environmental constraints. Tel. 937-255-3636 x7387 (DSN 785-3636 x7387), email: [Michael.Shelley@afit.edu](mailto:Michael.Shelley@afit.edu).

**SLAGLEY, JEREMY M., Maj**, Assistant Professor of Industrial Hygiene, Department of Systems and Engineering Management, AFIT Appointment Date: 2006 (AFIT/ENV); BA, Environmental Engineering, US Military Academy, 1993; MS in Industrial Hygiene, University of Iowa, 2000; Ph.D., Occupational Safety and Health, West Virginia University, 2006. Maj Slagley's research interests include engineering controls for noise and airborne hazards, Aerosol measurement, and exposure assessment. Tel. 937-255-3636 x4511 (DSN 785-3636 x4511), email [Jeremy.Slagley@afit.edu](mailto:Jeremy.Slagley@afit.edu)

**SMITH, DAVID A., LtCol**, Assistant Professor of Environmental Science and Engineering, AFIT Appointment Date: 2006 (AFIT/ENV); B.A. (Mathematics/Secondary Education), Central Methodist College, 1986; MS (Nuclear Engineering (Health Physics)), University of Missouri - Columbia, 1990; MS (Nuclear and Radiological Engineering (Diagnostic Medical Physics)), 1997, University of Florida - Gainesville; PhD (Environmental Sciences), 2006, Ohio State University. LtCol Smith's research interests include Chemical, Biological, Radiological, and Nuclear (CBRN) response (medical, equipment and communication integration), CBRN detection, assessment of ecological and human health effects of weapons of mass destruction. Tel. 937-255-3636 x 4711 (DSN 785-3636 x 4711), email: [david.a.smith@afit.edu](mailto:david.a.smith@afit.edu)

**SMITH, JEFFREY S., Lt Col**, Assistant Professor of Finance, Department of Systems and Engineering Management, AFIT Appointment Date: 2004 (AFIT/ENV); BA, Economics, University of South Carolina, 1990; MS in Applied Economics, Wright State University, 1995; Ph.D., Economics, University of Tennessee, 2004. Lt Col Smith's research interests include using environmental valuation methods for DOD applications (specifically using non-market valuation techniques) and government financial analysis. Tel. 937-255-3636 x7393 (DSN 785-3636 x7393), email [Jeffrey.Smith@afit.edu](mailto:Jeffrey.Smith@afit.edu)

**THAL, ALFRED E., JR.**, Assistant Professor of Engineering Management, Department of Systems and Engineering Management, AFIT Appointment Date: 1998 (AFIT/ENV); BS, Civil Engineering, Texas Tech University, 1981; MS, Engineering Management, AFIT, 1985; PhD, Environmental Engineering, University of Oklahoma, 1999. Dr Thal's research interests include engineering and environmental management, groundwater flow and remediation technologies, facility and infrastructure management, product development, and project management. Tel. 937-255-3636 x7401 (DSN 785-3636 x7401), email: [Al.Thal@afit.edu](mailto:Al.Thal@afit.edu).

**TURNER JASON M., Maj**, Assistant Professor of Information Resource Management, AFIT Appointment Date: 2006 (AFIT/ENV); BS, Industrial Psychology, University of Wisconsin, Madison, WI, 1992; MS, Information of Resource Management, Air Force Institute of Technology, Dayton, OH, 1997; PhD, Information Science, University of Texas, Austin, TX, 2006. Maj Turner's research interests include human factors/HCI, interface design and usability, and the social and organizational uses of information and information technology and their impacts on interpersonal communication; individual and collaborative decision-making; and collocated, virtual, and distributed work processes. Tel. 937-255-3636 x7407 (DSN 785-3636 x7407), email: [Jason.Turner@afit.edu](mailto:Jason.Turner@afit.edu).

**VITALE, DEAN C., Lt Col**, Instructor of Management, Department of Systems and Engineering Management, AFIT Appointment Date: 2007 (AFIT/ENV); BS, Business Administration, The University of Florida, 1988; MS, Human Resource Development, Webster University, 1997; Doctoral Candidate, Management, Auburn University. Lt Col Vitale's research interests include organizational analysis and change, influence in organizations, and research methods. Tel. 937-255-3636 x7395 (DSN 785-3636 x7395), email: [Dean.Vitale@afit.edu](mailto:Dean.Vitale@afit.edu)

**WEST, CHRISTOPHER J., Lt Col**, Assistant Professor, Department of Systems and Engineering Management, AFIT Appointment Date: 2006 (AFIT/ENV); BS, Electrical Engineering, Auburn University, AL 1991; MS, Engineering and Environmental Management, Air Force Institute of Technology, Wright-Patterson AFB, OH, 1996; Ph.D., Engineering Management, Old Dominion University, VA, 2006. Maj West's research interests are in the areas of Crisis Project Management, Crisis Engineering Services management, Crisis Knowledge Management, Organizational Control Center Performance, and Multidisciplinary Distributed Cognition. Tel. 937-255-3636 x7400 (DSN 785-3636 x7400), email: [cwest@afit.edu](mailto:cwest@afit.edu)

## **APPENDIX B: POST-DOCTORAL AND OTHER RESEARCH ASSOCIATES CREDENTIALS**

**BAEK, SEUNGSU**, Visiting Research Scientist in Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Ceramic Engineering Materials, 1982; MS, Process Development & Evaluation for Reuse of Sherben 1985; and PhD, Surface Modification in Sialon Composites, Yonsei University, Seoul, Korea, 1998. Dr. Baek is a principal researcher in ADD, Korea. He specializes in process development and evaluation of Ceramic Materials. Tel. 937-255-3636 x7490, e-mail: [Seungsu.Baek.ctr.kp@afit.edu](mailto:Seungsu.Baek.ctr.kp@afit.edu).

**ESSENHIGH, KATHERINE A.**, National Research Council Research Associate in Chemical Physics, Department of Engineering Physics, AFIT Appointment Date: 2005 (AFIT/ENP); BS, Engineering Physics, 1997; and PhD (2005), Mechanical Engineering, Department of Mechanical Engineering, Ohio State University, Columbus, Ohio. Dr. Essenhight specializes in non equilibrium fluid flow, chemical lasers, and optical diagnostics, particularly planar laser induced fluorescence in supersonic flow. Tel. 937-255-3636 x7305 (DSN 785-3636 x7947), email: [Katherine.Essenhight@afit.edu](mailto:Katherine.Essenhight@afit.edu)

**HUANG, JUNQI**, Research Associate in Engineering and Environmental Management, Department of Systems and Engineering Management, AFIT Appointment Date: 1997 (AFIT/ENV); BS, Hydrogeology, Hebei Geological College, China, 1982; MS and PhD, Fluid Mechanics in Porous Media, Chinese Academy of Sciences, 1990. Dr. Huang specializes in numerical modeling of flow and transport in porous media. He is also interested in numerical simulation of non-Newtonian fluid flow and electromagnetic scattering. Tel. 937-255-3636 x7402 (DSN 785-3636 x7402), email: [Junqi.Huang@afit.edu](mailto:Junqi.Huang@afit.edu).

**LI, ALEX GUANGMING**, Senior Research Associate and Adjunct Faculty in the Department of Engineering Physics, AFIT Appointment Date: 1995 (AFIT/ENP); PhD in Materials Science, 1990, Chinese Academy of Sciences at Shanghai Institute of Optics and Fine Mechanics; MS in Materials Science, 1987, Chinese Academy of Sciences at Shanghai Institute of Optics and Fine Mechanics; BS in Materials Science, 1982, Changchun University of Science and Technology. Dr Li teaches the AFIT Materials Characterization course, MATL 680. His research interest is in developing AFM techniques for measuring nanometer-scale elastic modulus of surfaces. He has invented a novel AFM nano-patterning technique for producing sub-100 nm nanostructures in polymers. Additional research involves characterizing surface morphologies of glasses, ceramics, semiconductors, polymers, nano-carbon composites, and biological spores using AFM, SEM, TEM, optical interferometer, and optical microscopes; identifying and analyzing chemical compositions and structures using FTIR, Raman (micro-Raman), photoluminescence, EPR, XPS, ESCA, SEM, TEM, and XRD. Tel. 937-255-3636 x4835, e-mail: [Guangming.Li@afit.edu](mailto:Guangming.Li@afit.edu).

**O'NEAL, JEROME**, Research Assistant in Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Mathematics and Foreign Languages, U.S. Military Academy at West Point, 1993; MS, Operations Research, Georgia Institute of Technology, 2004; PhD, Industrial and Systems Engineering, Georgia Institute of Technology, 2005. Dr. O'Neal specializes in mathematical optimization, including interior-point methods and integer programming. He is also interested in business and social science applications of mathematical optimization.

**PERCIVAL, SCOTT A.**, Research Associate in Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2007 (AFIT/ENS); Center for Operational Analysis (COA), BS, Operations Research, United States Air Force Academy, 2001; MS, Operations Research, Air Force Institute of Technology, 2003; Mr. Percival specializes in applied statistics, specifically multivariate analysis applied to Hyper-Spectral Imagery.

**RYU, MEE YI**, Research Associate in Semiconductor Physics, Department of Engineering Physics, AFIT Appointment Date: 2006 (AFIT/ENP); BS, Physics, Yeungnam University, Taegu, Korea, 1995; MS (1997) and PhD (2001), Semiconductor Physics, Department of Information and Communications, Gwangju Institute of Science and Technology, Gwangju, Korea. Dr. Ryu is a faculty member of Department of Physics, Kangwon National University, Chuncheon, Kangwondo, Korea. She specializes in electrical, optical, and magnetic characterization of various semiconducting materials including dilute magnetic wide band gap semiconductors. Tel. 937-255-3636 x7305 (DSN 785-3636 x7305), email: [Mee.Ryu@afit.edu](mailto:Mee.Ryu@afit.edu).

**YUN, SU-JIN**, Visiting Research Scientist in Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Chemical Engineering, Sogang University, Korea, 1986; MS, Chemical Engineering, Texas A&M University, USA, 1991; PhD, Mechanical Engineering, Texas A&M University, USA, 1996. Dr. Yun specializes in the Sol-Gel process from silicon ethoxide using hypercritical conditions, and specializes in numerical modeling in metal forming in the equal channel extrusion process. He is also interested in numerical analysis for plastic deformation localization under various constitutive relations. Tel. 937-255-3636 x7495, email: [sjy3788@yahoo.co.kr](mailto:sjy3788@yahoo.co.kr) or [SuJin.Yun.ctr.kp@afit.edu](mailto:SuJin.Yun.ctr.kp@afit.edu).

## APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations.

|            |                                                                         |
|------------|-------------------------------------------------------------------------|
| ACC        | Air Combat Command                                                      |
| ACES       | Applied Computational Electromagnetic Society                           |
| AETC       | Air Education and Training Command                                      |
| AFCEE      | Air Force Center for Environmental Excellence                           |
| AFCESA     | Air Force Civil Engineer Support Agency                                 |
| AFIT       | Air Force Institute of Technology                                       |
| AFLMA      | Air Force Logistics Management Agency                                   |
| AFMC       | Air Force Materiel Command                                              |
| AFOTEC     | Air Force Operational Test and Evaluation Center                        |
| AFRL       | Air Force Research Laboratory                                           |
| AFRL/AFOSR | AFRL/Air Force Office of Scientific Research                            |
| AFRL/DE    | AFRL/Directed Energy Directorate                                        |
| AFRL/HE    | AFRL/Human Effectiveness Directorate                                    |
| AFRL/IF    | AFRL/Information Directorate                                            |
| AFRL/ML    | AFRL/Materials and Manufacturing Directorate                            |
| AFRL/MN    | AFRL/Munitions Directorate                                              |
| AFRL/PR    | AFRL/Propulsion Directorate                                             |
| AFRL/SN    | AFRL/Sensors Directorate                                                |
| AFRL/VA    | AFRL/Air Vehicles Directorate                                           |
| AFRL/VS    | AFRL/Space Vehicles Directorate                                         |
| AFCA       | Air Force Communication Agency                                          |
| AFSA       | Air Force Security Agency                                               |
| AFSEO      | Air Force Seek Eagle Office (46 SK/SKE)                                 |
| AFSPC      | Air Force Space Command                                                 |
| AFTAC      | Air Force Technical Applications Center                                 |
| AFWA       | Air Force Weather Agency                                                |
| AHS        | American Helicopter Society                                             |
| AIA        | Air Intelligence Agency                                                 |
| AIAA       | American Institute of Aeronautics and Astronautics                      |
| AMC        | Air Mobility Command                                                    |
| ARDA       | Advanced Research and Development Activity                              |
| ASME       | American Society of Mechanical Engineers                                |
| ASC        | Aeronautical Systems Center                                             |
| AU         | Air University                                                          |
| DAGSI      | Dayton Area Graduate Studies Institute                                  |
| DARPA      | Defense Advanced Research Projects Agency                               |
| DETEC      | Directed Energy Test and Evaluation Capability                          |
| DISA       | Defense Information Systems Agency                                      |
| DoD        | Department of Defense                                                   |
| DOE        | Department of Energy                                                    |
| DoS        | Department of State                                                     |
| DTRA       | Defense Threat Reduction Agency                                         |
| IEEE       | Institute of Electrical and Electronics Engineers                       |
| INCOSE     | International Council on Systems Engineering                            |
| ISSMO      | International Society for Structural and Multidisciplinary Optimization |
| MORS       | Military Operations Research Society                                    |
| NASA       | National Aeronautics and Space Administration                           |
| NASIC      | National Air and Space Intelligence Center                              |
| NSA        | National Security Agency                                                |
| NSF        | National Science Foundation                                             |

|            |                                                   |
|------------|---------------------------------------------------|
| NSSA       | National Security Space Architect                 |
| NSSO       | National Security Space Office                    |
| OSD        | Office of the Secretary of Defense                |
| PACAF      | Pacific Air Forces                                |
| SAE        | Society of Automotive Engineers                   |
| SAF        | Office of the Secretary of the Air Force          |
| SPIE       | The International Society for Optical Engineering |
| USSTRATCOM | United States Strategic Command                   |
| USAF       | United States Air Force                           |
| USSOCOM    | United States Special Operations Command          |
| USTRANSCOM | United States Transportation Command              |
| WPAFB      | Wright-Patterson Air Force Base                   |

## **APPENDIX D: INFORMATION FOR OBTAINING A COPY OF A THESIS**

Copies of theses with unlimited distribution may be obtained from the following agencies depending on the particular circumstances.

U.S. Government employees, individuals affiliated with a research and development activity within the U.S. Government, or its associated contractors, subcontractors, or grantees, under current U.S. Government contract; can order from:

DEFENSE TECHNICAL INFORMATION CENTER  
8725 John J. Kingman Road, STE 0944  
Ft Belvoir, VA 22060-6218  
Phone: 1-800-225-3842  
Website: <http://www.dtic.mil/>

Private U. S. citizens without a U. S. Government contract can order from:

NATIONAL TECHNICAL INFORMATION SERVICE  
U.S. Department of Commerce  
5285 Port Royal Road  
Springfield, VA 22161  
Phone: 1-800-553-6847  
Website: <http://www.ntis.gov>

Information needed to obtain a given document:  
1) author, 2) title, 3) publication date, and 4) reference to the document as an Air Force Institute of Technology thesis.

Anyone may download an electronic copy (unlimited distribution designation only) from:

CADRE/ARS  
Research Support at the College of Aerospace Doctrine  
Research and Education  
Maxwell AFB, AL 36112  
1-334-953-5904 or DSN 493-5904  
Website: <https://research.maxwell.af.mil/>

After choosing the publication year from the pull-down menu,  
click on the “AFIT” link under the “Student Research Studies” header.

General inquiries concerning faculty and student research at the Air Force Institute of Technology may be addressed to:

Office of Research and Sponsored Programs (AFIT/ENR)  
Air Force Institute of Technology  
2950 Hobson Way  
Wright-Patterson AFB, OH 45433-7765  
Phone: 937-255-3633 (DSN 785-3633)  
Website: <http://www.afit.edu>  
Email: [research@afit.edu](mailto:research@afit.edu)

| REPORT DOCUMENTATION PAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |                                        |                                   | Form Approved<br>OMB No. 074-0188                                       |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------|-----------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p><b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b></p> |                      |                                        |                                   |                                                                         |                                                                                     |
| <b>1. REPORT DATE (DD-MM-YYYY)</b><br>15-02-2008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      | <b>2. REPORT TYPE</b><br>Annual Report |                                   | <b>3. DATES COVERED (From – To)</b><br>01 Oct 06 – 30 Sep 07            |                                                                                     |
| <b>4. TITLE AND SUBTITLE</b><br><br>AIR FORCE INSTITUTE OF TECHNOLOGY RESEARCH REPORT 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                        |                                   | <b>5a. CONTRACT NUMBER</b>                                              |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   | <b>5b. GRANT NUMBER</b>                                                 |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   | <b>5c. PROGRAM ELEMENT NUMBER</b>                                       |                                                                                     |
| <b>6. AUTHOR(S)</b><br><br>Office of Research and Sponsored Programs, Graduate School of Engineering and Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                                        |                                   | <b>5d. PROJECT NUMBER</b>                                               |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   | <b>5e. TASK NUMBER</b>                                                  |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   | <b>5f. WORK UNIT NUMBER</b>                                             |                                                                                     |
| <b>7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S)</b><br>Air Force Institute of Technology<br>Graduate School of Engineering and Management (AFIT/EN)<br>2950 Hobson Way<br>WPAFB OH 45433-7765                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                                        |                                   | <b>8. PERFORMING ORGANIZATION REPORT NUMBER</b><br><br>AFIT/EN-TR-08-02 |                                                                                     |
| <b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b><br>Air Force Institute of Technology<br>Graduate School of Engineering and Management (AFIT/EN)<br>2950 Hobson Way<br>WPAFB OH 45433-7765                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                                        |                                   | <b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>                                 |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   | <b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>                           |                                                                                     |
| <b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b><br>APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |                                        |                                   |                                                                         |                                                                                     |
| <b>13. SUPPLEMENTARY NOTES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                                        |                                   |                                                                         |                                                                                     |
| <b>14. ABSTRACT</b><br>This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting the school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.                                                                                                                                                                                          |                      |                                        |                                   |                                                                         |                                                                                     |
| <b>15. SUBJECT TERMS</b><br>Air Force Institute of Technology, Research Report 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                                        |                                   |                                                                         |                                                                                     |
| <b>16. SECURITY CLASSIFICATION OF:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                      |                                        | <b>17. LIMITATION OF ABSTRACT</b> | <b>18. NUMBER OF PAGES</b>                                              | <b>19a. NAME OF RESPONSIBLE PERSON</b>                                              |
| <b>REPORT</b><br>U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>ABSTRACT</b><br>U | <b>c. THIS PAGE</b><br>U               |                                   |                                                                         | Dr. Michael J. Caylor                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                        |                                   |                                                                         | <b>19b. TELEPHONE NUMBER (Include area code)</b><br>937-255-3633, research@afit.edu |

**Standard Form 298 (Rev. 8-98)**  
Prescribed by ANSI Std. Z39-18