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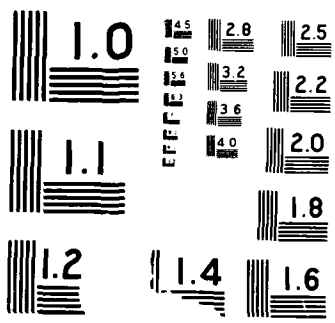
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SECOND HOWARD UNIVERSITY SYMPOSIUM ON NONLINEAR SEMIGROUPS, PARTIAL DIFFERENTIAL EQUATIONS AND ATTRACTORS

SYMPOSIUM REPORT

BY

DR. TEPPER L. GILL
AND
DR. W.W. ZACHARY

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There were 76 participants composed of 13 graduate students; 12 recent Ph.D.'s; 5 international visitors; 15 engineers and 36 research mathematicians representing over thirty major American universities in addition to a few major government and private research laboratories. The symposium was quite successful.

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SECOND HOWARD UNIVERSITY SYMPOSIUM ON NONLINEAR SEMIGROUPS, PARTIAL DIFFERENTIAL EQUATIONS AND ATTRACTORS

The second Howard University Symposium on Nonlinear Semigroups, Partial Differential Equations and Attractors convened in Washington, D.C. August 3-7, 1987 on the campus of Howard University. The symposium organizers were Tepper L. Gill (Howard University) and Woodford W. Zachary (Naval Research Laboratory). They were ably supported by James A. Donaldson (Howard), L. Evans (University of Maryland), James Sandefur and Andrew Vogt (Georgetown University) and Michael Reed (Duke University).

The symposium was made possible by grant support from: Air Force Office of Scientific Research, Army Research Office, Department of Energy, NASA, National Science Foundation, and the Office of Naval Research.

The symposium opened with breakfast in the faculty dining room of the Blackburn Center. Mr. M. Lucius Walker, Jr., Dean of the School of Engineering, gave the opening address. Dr. Walker commented on the urgent need for continued and deeper collaboration between mathematicians and engineers in facing some of the difficult problems attendent to space exploration.

There were 76 participants composed of 13 graduate students; 12 recent Ph.D.'s; 5 international visitors (Canada, France, Japan, Nigeria, and Spain); 15 engineers and 36 research mathematicians representing over thirty major American universities in addition to a few major government and private research laboratories. The symposium program of speakers along with other information may be found in the appendix to this report.

The proceedings of the conference are currently being prepared for publication by Springer.

SECOND HOWARD UNIVERSITY SYMPOSIUM ON NONLINEAR SEMIGROUPS, PARTIAL DIFFERENTIAL EQUATIONS AND ATTRACTORS

HOWARD UNIVERSITY
WASHINGTON, D.C.
3-7 August 1987

TOPICS

This conference will focus on nonlinear partial and integrodifferential equations by considering them as infinite-dimensional dynamical systems. One day will be devoted to new classes of equations that arise via mathematical modelling of large flexible space structures. Some of the topics which will be represented are:

- Nonlinear Semigroups
- Dynamical Systems
- Attractors
- Reduction to Finite-Dimensional Systems
- Inertial Manifolds
- Bifurcation Theory
- Control Theory
- Compensated Compactness
- Nonlinear Evolution Equations
- Reaction-Diffusion Equations
- Stability Analysis of PDE's

FORMAT

There will be papers reviewing important developments since the last conference and presenting key recent results.

INVITED TALKS

M. Berger, University of Massachusetts
N. Bhatia, University of Maryland
S.N. Chow, Michigan State University
M. Crandall, University of Wisconsin
H. Engler, Georgetown University
L.C. Evans, University of Maryland
J.A. Goldstein, Tulane University
J. Mallet-Paret, Brown University
R.H. Martin, Jr., North Carolina State University
B. Nicolaenko, Los Alamos National Laboratory
M.C. Reed, Duke University
J. Sandefur, Georgetown University
E. Schechter, Vanderbilt University
T. Siedman, University of Maryland
G.R. Sell, University of Minnesota
A. Vogt, Georgetown University
W.E. Fitzgibbon, University of Houston
S. Reich, U.S.C.
L. Vazquez, University of Madrid
W. Strauss, Brown University
R. Steinberg, ONR Boston

IMPORTANT DATES

Deadline for submission of Abstracts: June 15, 1987

Preconference Registration: June 1, 1987

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Sponsored By: The Departments of Mathematics and Electrical Engineering, Howard University with support from Army Research Office, NASA, Air Force Office of Scientific Research, Department of Energy, Office of Naval Research, and National Science Foundation.

SECOND HOWARD UNIVERSITY SYMPOSIUM ON

NONLINEAR SEMIGROUPS, PARTIAL DIFFERENTIAL EQUATIONS

AND ATTRACTORS

August 3-7, 1987

PROGRAM

Monday, August 3

7:30-8:30 a.m.	Registration and Breakfast Faculty Dining Room Blackburn Center
8:30 - 8:45 a.m.	Opening Address Dr. M. Lucius Walker, Jr. Dean, School of Engineering

SESSION A: Auditorium, Chemistry Building

NONLINEAR EVOLUTION EQUATIONS
Chairman: Walter Strauss, Brown University

9:00 - 9:45 a.m.	George R. Sell, University of Minnesota "Melnikov Transformations, Bernouilli Bundles and Almost Periodic Perturbations"
9:45-10:30 a.m.	Michael Weinstein, Princeton University "Remarks on Stability, Instability, and Resonances"
10:30 - 11:00 a.m.	Coffee Break
11:00 - 11:45 a.m.	Robert Carroll, University of Illinois "Some Features of Maps from Potentials to Spectral Data"
11:45 - 12:30 p.m.	J. E. Lin, George Mason University "On the Integrability of Nonlinear Evolution Equations"
12:30 - 2:00 p.m.	Lunch

Tuesday, August 4

SESSION D: Auditorium, Chemistry Building

ATTRACTORS and BIFURCATIONS
Chairman: George Sell, University of Minnesota

9:15 - 10:00 a.m.	Melvyn Berger, University of Massachusetts, Amherst "Vortex Motions in Mathematics and Fluids, Their Bifurcations and Instabilities"
10:00 - 10:45 a.m.	Shui-Nee Chow, Michigan State University "Bifurcation of Homoclinic Orbits"
10:45 - 11:15 a.m.	Coffee Break
11:15 - 12:00 noon	Basil Nicolaenko, Los Alamos National Laboratory "A New Construction of Integral Inertial Manifolds: Applications to Two-Dimensional Turbulent Flows with Computer Movies"
12:00 - 1245 p.m.	Nam P. Bhatia, University of Maryland, Baltimore County "Separated Loops and an Extension of Sarkovskii's Theorem"

SESSION E: Lecture Hall G-9, Chemistry Building

GENERAL INTEREST
Chairman: Luis Vazquez, Universidad Complutense, Madrid

8:30 - 9:15 a.m.	Robert Sternberg, ONR, Boston "Symmetry in Geometrical Optics"
9:15 - 10:00 a.m.	Stuart Antman, University of Maryland "Asymptotics of Quasilinear Equations of Viscoelasticity"
10:00 - 10:45 a.m.	Jerome A. Goldstein, Tulane University "Spin Polarized Thomas-Fermi Theory"
10:45 - 11:15 a.m.	Coffee Break
11:15 - 12:00 noon	Thomas Seidman, University of Maryland Baltimore County "Switching Systems and Periodicity"
12:00 - 12:45 p.m.	Andrew Vogt, Georgetown University "The Riccati Equation Revisited"
12:45 - 2:00 p.m.	Lunch

Wednesday , August 5

SESSION H: Auditorium, Chemistry Building

SPECIAL DAY ON LARGE SPACE STRUCTURES
Chairman: Taft H. Broome ,Jr., Howard University

8:30 - 9:15 a.m.	Norris Stubbs, Texas A & M University "Nonlinear Problems in Damage Mechanics of Large Space Structures"
9:15 - 10:00 a.m.	Jack Lagnese, Georgetown University "Infinite Horizon Linear-quadratic Problems for Plates"
10:00 - 10:45 a.m.	Michael Polis, Wayne State University "On Issues Related to Stabilization of Hyperbolic Distributed Parameter Systems"
10:45 - 11:15 a.m.	Coffee Break
11:15 - 12:00 noon	Robert Reiss, Howard University "Optimization Criteria for Large Space Structures Modeled as Continuous Media"
12:00 - 12:45 p.m.	Anthony K. Amos, AFOSR "Nonlinear P.D.E. Issues for Space Structure Problems of Interest to AFOSR"
12:45 - 1:30 p.m.	Taft Broome, Howard University "A Special P.D.E. Problem for Continuous Media Modeling of Large Space Structures"

Thursday, August 6

SESSION J: Auditorium, Chemistry Building

NONLINEAR SEMIGROUPS
Chairman: L.C. Evans, University of Maryland

9:15 - 10:00 a.m.	Robert Martin, Jr., North Carolina State University "Strict Inequalities for Semilinear Systems of Differential Equations"
10:00 - 10:45 a.m.	John Mallet-Paret, Brown University "Poincare-Bendixon Theory for Reaction Diffusion Equations"
10:45 - 11:15 a.m.	Coffee Break
11:15 - 12:00 noon	P. Souganidis, Brown University "A Geometrical Optics Approach to Certain Reaction Diffusion Equations"
12:00 - 2:00 p.m.	Lunch

Friday, August 7

SESSION M: Auditorium, Chemistry Building

NONLINEAR EVOLUTION EQUATIONS
Chairman, Andrew Vogt, Georgetown University

9:15 - 10:00 a.m.	David W. McLaughlin, University of Arizona "Coherence and Chaos in Non-Integrable PDE's"
10:00 - 10:45 a.m.	T.H. Cazenave, Universite de Paris VI "Some Remarks on Nonlinear Schrodinger Equations"
10:45 - 11:15 a.m.	Coffee Break
11:15 - 12:00 noon	Luis Vazquez, Universidad Complutense, Madrid "The Finite Difference Method in the Quantum Theory"
12:00 - 12:45 p.m.	Walter Miller, Howard University "Dynamics of Periodically Forced Traveling Waves of the KdV Equation and Chaos"
12:45 - 2:00 p.m.	Lunch

SESSION N: Auditorium, Chemistry Building

EXISTENCE, ETC.
Chairman: James Sandefur, Georgetown University

2:00 - 2:45 p.m.	Thomas Seidman, University of Maryland, Baltimore County. "A Parabolic System Arising in Semiconductor Theory"
2:45 - 3:30 p.m.	Joel Avrin, University of North Carolina at Charlotte "The Semilinear Parabolic Equations of Electrophoretic Separation"
3:30 - 4:45 p.m.	Mary E. Parrott, University of South Florida "The Weak Solution of a Functional Differential Equation in a General Banach Space "
4:45 - 5:30 p.m.	Eric Schechter, Vanderbilt University "Some Local-in-time Results for Nonlinear Evolutions"

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