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# RPPR Final Report

as of 05-May-2020

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**Final Report** for Period Beginning 04-May-2015 and Ending 03-Dec-2015

**Title:** 2015 Hypervelocity Impact Symposium

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**STEM Participants:** 22

**Major Goals:** The Hypervelocity Impact Symposium (HVIS) serves as the principal forum for the discussion, interchange, and presentation of the physics of high- and hypervelocity impact and related technical areas. It is intended for scientists, engineers, and technical managers from academia, industry, government, and defense programs. The HVI Symposia have a long-standing international reputation as a catalyst for stimulating research in this area through a wealth of oral and poster presentations, and commercial exhibits. The Symposium's proceedings are the major archival source of papers published in this field.

The symposium is organized by the Hypervelocity Impact Society, a professional organization devoted to the advancement of the science and technology of hypervelocity impact and the related technical areas required to facilitate an understanding of hypervelocity impact phenomena. The goals of the Society are to foster the development and exchange of technical information in the discipline of high speed impact phenomena by promoting technical excellence, encouraging peer-reviewed publications, and holding meetings on a regular basis. One of the ways these goals are realized is by organizing regularly scheduled Hypervelocity Impact Symposia. These Symposia provide opportunities for Society members to exchange information in a variety of technical areas of mutual interest.

**Accomplishments:** The 2015 Hypervelocity Impact Symposium (HVIS2015) was the 13th in the "modern" series, i.e. beginning in 1986, and was held in Boulder, Colorado from April 26 – 30, 2015. Total attendance at HVIS2015 was 162 which included 22 students and 10 commercial exhibitors. The papers presented at HVIS2015 were all peer reviewed and published as Vol. 103 of Procedia Engineering, and can be accessed online at no cost at <http://www.sciencedirect.com/science/journal/18777058/103>. The proceedings volume contains all of the papers presented at HVIS2015, including all oral and all poster papers in the following topic areas:

- Hypervelocity Phenomenology Studies
- High-Velocity Launchers and Diagnostics
- Spacecraft Meteoroid/Debris Shielding and Failure Analyses
- Material Response (including EOS)
- Fracture and Fragmentation
- High-Velocity Penetration Mechanics and Target Response
- Armor/Anti-Armor and Ballistic Technology
- Analytical and Numerical Methodologies
- Asteroid Impact and Planetary Defense Technology
- Theoretical/Applied Mechanics Relevant to Hypervelocity Impact

**RPPR Final Report**  
as of 05-May-2020

**Training Opportunities:** Nothing to Report

**Results Dissemination:** The papers presented at HVIS2015 were all peer reviewed and published as Vol. 103 of Procedia Engineering, and can be accessed online at no cost at <http://www.sciencedirect.com/science/journal/18777058/103>. The proceedings volume contains all of the papers presented at HVIS2015, including all oral and all poster papers.

**Honors and Awards:** In keeping with the format of previous symposia, the first day of the conference (Monday) began with a keynote address by the recipient of the Society's Distinguished Scientist Award, Dr. William P. Schonberg.

**Protocol Activity Status:**

**Technology Transfer:** Nothing to Report

**PARTICIPANTS:**

**Participant Type:** Other (specify)

**Participant:** Conference Attendees @ HVIS2015

**Person Months Worked:** 1.00

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International Collaboration:

International Travel:

National Academy Member: N

Other Collaborators:

**Funding Support:**

# **The 2015 Hypervelocity Impact Conference**

**Final Report**

**Contract No. W911-NF-15-1-0200**

**Submitted to**

**U.S. Army Research Office  
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**October 2015**

## Introduction

The Hypervelocity Impact Symposium (HVIS) serves as the principal forum for the discussion, interchange, and presentation of the physics of high- and hypervelocity impact and related technical areas. It is intended for scientists, engineers, and technical managers from academia, industry, government, and defense programs. The HVI Symposia have a long-standing international reputation as a catalyst for stimulating research in this area through a wealth of oral and poster presentations, and commercial exhibits. The Symposium's proceedings are the major archival source of papers published in this field.

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## HVIS2015

The 2015 Hypervelocity Impact Symposium (HVIS2015) was the 13<sup>th</sup> in the “modern” series, i.e. beginning in 1986, and was held in Boulder, Colorado from April 26 – 30, 2015. Total attendance at HVIS2015 was 162 which included 22 students and 10 commercial exhibitors. The papers presented at HVIS2015 were all peer reviewed and published as Vol. 103 of *Procedia Engineering*, and can be accessed online at no cost at <http://www.sciencedirect.com/science/journal/18777058/103>. The proceedings volume contains all of the papers presented at HVIS2015, including all oral and all poster papers in the following topic areas:

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- Armor/Anti-Armor and Ballistic Technology
- Analytical and Numerical Methodologies

- Asteroid Impact and Planetary Defense Technology
- Theoretical/Applied Mechanics Relevant to Hypervelocity Impact

In keeping with the format of previous symposia, the first day of the conference (Monday) began with a keynote address by the recipient of the Society's Distinguished Scientist Award, Dr. William P. Schonberg. The second, third, and fourth days (Tuesday through Thursday, respectively) each began with a plenary session during which an invited speaker discussed the state-of-the-art in his or her particular area of expertise. The following is a list of the plenary speakers at HVIS2015 as well as the topical area of their presentations.

- Tuesday - Keith Jamison (SAIC) - real time penetration tracking in armor / anti-armor problems
- Wednesday - Michael Squire (NASA) - needs and trends in hypervelocity impact modeling, testing, and technology
- Thursday - Bill Ailor (Aerospace Corp) - current state of planetary defense

The Hypervelocity Impact Society deeply appreciates the support provided by the U.S. Army Research Office.