

HYPERSONIC DEFENSE 2023

**CONFERENCE
AND EXHIBITION**

**HUNTSVILLE, AL, USA
7TH - 8TH NOVEMBER 2023**

ORGANISED BY:

INTELLIGENCE-SEC
HIGHLY REGARDED SECURITY EVENTS

Hypersonic Defense 2023

Conference and Exhibition Huntsville, AL, USA | 7th – 8th November 2023

Sponsors and Exhibitors



Confirmed Speakers

- Dr. Keith Krapels, Director, Technical Center, U.S. Army Space and Missile Defense Command
- David McNeill, Deputy Director of Engineering, U.S. Missile Defense Agency
- Dr. Thomas Karako, Senior Fellow, Director, Missile Defence Project, Center for Strategic and International Studies (CSIS)
- Lieutenant General Neil Thurgood (Ret), Former Director of Hypersonics, Directed Energy, Space, and Rapid Acquisition, Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology
- Jeffrey Boulware, Technical Director, Joint Integrated Air and Missile Defense Organization (JIAMDO)
- Bogusz Madej, Integrated Air and Missile Defence Section, NATO
- Dr. Chujen Lin, Senior Director for R&D Laboratories Programs, BlueHalo
- Dr. Ioannis Nikolos, Director of the Turbomachines and Fluid Dynamics Laboratory, Technical University of Crete, Greece
- Dr. Iain D. Boyd, Director of the Center for National Security Initiatives and Professor of Aerospace Engineering Sciences, University of Colorado
- Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama Huntsville, USA
- Dr. Hassan Saad Ifti, High-Speed Aerodynamics and Propulsion Laboratory (HAPL), University of Maryland, USA
- Professor Rodney Bowersox, Director, Texas A&M National Aerothermochemistry and Hypersonics Laboratory

For more information on how to book your place contact us at:

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Conference Day One – Tuesday 7th November 2023

08.30 REGISTRATION AND NETWORKING

09.00 CHAIRMAN'S OPENING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama Huntsville, USA

U.S. MISSILE AND HYPERSONIC DEFENSE DEVELOPMENTS

09.10 DEVELOPMENT OF DEFENSIVE SYSTEMS TO COUNTER HYPERSONIC THREATS

- Current developments being made in missile defense capabilities
 - Current testing requirements and developments
 - Overview of the hypersonic defense programs
- David McNeill, Deputy Director of Engineering, U.S. Missile Defense Agency

09.50 THE TECHNOLOGY OPPORTUNITIES FOR MISSILE DEFEAT

- Overview of current U.S. missile tracking systems
- MDA's Missile Defense/Hark Kill/GPI effort
- What is needed next?

Dr. Keith Krapels, Director, Technical Center, U.S. Army Space and Missile Defense Command

10.30 NETWORKING COFFEE BREAK

11.00 HYPERSONIC DEFENSE AND OFFENSIVE OPTIONS AND RESEARCH

- Current trends in hypersonic developments
- Deterrence options – review of different missile defense systems
- Battling budget restraints

Dr. Thomas Karako, Senior Fellow, Director, Missile Defence Project, Center for Strategic and International Studies (CSIS)

11.40 U.S. HYPERSONIC DEVELOPMENTS FOR THE FUTURE

- Overview of the current deterrence systems
- Combating the hypersonic threat
- Creating an effective U.S. hypersonic weapons system
- What is needed next?

Lieutenant General Neil Thurgood (Ret), Former Director of Hypersonics, Directed Energy, Space, and Rapid Acquisition, Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

12.20 NETWORKING LUNCH BREAK



13.20 ADVANCED PHASED ARRAY TELEMETRY RECEIVER FOR HYPERSONIC TESTS

- Introduction
- Challenge of collecting telemetry data for hypersonic tests
- Benefit of using phased array for telemetry receivers
- Design of phased array telemetry receivers
- Status of the development
- Summary

Dr. Chujen Lin, Senior Director for R&D Laboratories Programs, BlueHalo

COOPERATION AND ENGAGEMENT IN HYPERSONIC DEFENSE PROGRAMS

14.00 NATO APPROACH TO INTEGRATED AIR AND MISSILE DEFENSE, INCLUDING DEFENSE AGAINST HYPERSONIC WEAPONS

- Current NATO approach to IAMD
 - Current hypersonic threat to NATO
 - Coordinating strategic missile defence systems
- Bogusz Madej, Integrated Air and Missile Defence Section, NATO

14.40 CHAIRMAN'S CLOSING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama Huntsville, USA

15.00 NETWORKING DRINKS RECEPTION

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15.30 CLOSE OF CONFERENCE AND EXHIBITION DAY ONE

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Conference Day Two – Wednesday 8th November 2023

08.30 REGISTRATION AND NETWORKING

09.00 CHAIRMAN'S OPENING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama Huntsville, USA

RESEARCH AND PROJECTS THAT ARE SUPPORTING HYPERSONIC DEFENSE

09.10 CURRENT HYPERSONIC TESTING AND SIMULATIONS

- Current hypersonic simulations and testing happening at the Technical University of Crete
- Importance of understanding flight of a hypersonic weapon

Dr. Ioannis Nikolos, Director of the Turbomachines and Fluid Dynamics Laboratory, Technical University of Crete, Greece

09.50 INTEGRATED AIR MISSILE DEFENSE CAPABILITIES THROUGH COLLABORATIONS, SIMULATIONS AND TESTING

- Current capability gaps in IAMD systems
 - Testing and simulations in the coming year
 - New concepts to review to develop IAMD systems
- Jeffrey Boulware, Technical Director, Joint Integrated Air and Missile Defense Organization (JIAMDO)

10.30 NETWORKING COFFEE BREAK

11.00 OPPORTUNITIES FOR HYPERSONIC VEHICLE DETECTION AND TRACKING

- Unique phenomenology generated by hypersonic vehicles
- Scientific challenges in signature prediction
- Research pathway to development of operational capabilities

Dr. Iain D. Boyd, Director of the Center for National Security Initiatives and Professor of Aerospace Engineering Sciences, University of Colorado

11.40 TRANSPIRATION COOLING OF A HYPERSONIC VEHICLE AND ITS POTENTIAL FOR LEADING-EDGE SHAPE STABILITY

- Mixing mechanism between the boundary-layer gas and injected gas in a laminar, hypersonic flow
- Qualification of a Novel Porous Material — made of an Ultra-High-Temperature Ceramic (UHTC) with a melting point above 3000 K — for the purpose of transpiration cooling
- The potential for leading-edge shape stability using transpiration cooling for dual application

Dr. Hassan Saad Ifti, High-Speed Aerodynamics and Propulsion Laboratory (HAPL), University of Maryland, USA

12.20 NETWORKING LUNCH BREAK

13.20 SUPPORTING HYPERSONIC FLIGHT THROUGH RESEARCH AND DEVELOPMENT

- University Consortium for Applied Hypersonics
- TAMU Hypersonic Aerothermodynamic Research
- What is needed next?

Professor Rodney Bowersox, Director, Texas A&M National Aerothermochemistry and Hypersonics Laboratory

14.00 PANEL DISCUSSION – NEXT HYPERSONIC TESTING AND RESEARCH REQUIRED

Moderated by:

- Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama Huntsville, USA

Panellists:

- Dr. Hassan Saad Ifti, High-Speed Aerodynamics and Propulsion Laboratory (HAPL), University of Maryland, USA
- Dr. Iain D. Boyd, Director of the Center for National Security Initiatives and Professor of Aerospace Engineering Sciences, University of Colorado

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