



APRIL 10-11

GT/GTRI
WORKSHOP IN
HYPER
SONICS
(2025)

- Technical Presentations
- Poster Sessions
- Panel Discussions

WORKSHOP INFORMATION:

Thank you for attending the GT/ GTRI Workshop in Hypersonics (2025). This workshop is designed to bring together faculty, researchers, students, and leaders from government, industry, and academia.

This workshop will focus on topics of current interest in hypersonics to Faculty and Students at Georgia Tech, including advanced propulsion systems, hypersonic vehicle design, materials for extreme environments, flight testing, and workforce development.

Workshop Highlights:

- **Technical Presentations:** Showcasing Georgia Tech's faculty, student research, and capabilities in hypersonics.
- **Poster Sessions:** Featuring cutting-edge research projects.
- **Panel Discussions:** Hosted by subject matter experts (SMEs) from industry, government, and academia.
- **A Vertically Integrated Program (VIP) in Hypersonics:** Introduction of a new VIP program in hypersonics at Georgia Tech aimed at developing the future hypersonics workforce.
- **HyperSat:** A GTRI-funded Independent Research & Development (IRAD) initiative to develop a Hypersonic Flight Testbed.

WORKSHOP LOCATION:

GTRI Conference Center (Headquarters)
250 14th St. NW
Atlanta, GA 30332, United States

WI-FI ACCESS:

To connect, select "GTRI-Visitor" from the available wireless networks. Enter "GoJackets" (no quotes) when prompted for the password.

Open your web browser and log in with the following information:

Web Authentication:

- Username: **Apr**
- Password: **Bedstraw**

GT/GTRI WORKSHOP IN HYPERSONICS | 2025

April 10-11, 2025

Some sessions will be held at the Controlled Unclassified Information (CUI) level. Additional sessions may be restricted to UCAH Members and U.S. Citizens only

8:00 – 9:00 AM

Check-In

Coffee and Tea Service Along with Continental Breakfast

9:00 AM – 10:30 AM

Introductory Talks and Invited Presentation

Chair: Dr. Krish Ahuja

GTRI Conference Center Auditorium

9:00 AM

About the Workshop and Logistics

Dr. Krish Ahuja

Regents Professor, School of Aerospace Engineering

Head: Aerospace and Acoustics Technologies Division at GTRI (ATAS)

Director: GT Hypersonics Center of Excellence and Workshop Chair

9:10 AM

Welcome Remarks

Dr. George White

Senior Director, Strategic Partnerships, Office of the VIPR

9:20 AM

Introduction to Georgia Tech Research Institute (GTRI)

Dr. James Hudgens

Senior Vice President, Director, GTRI

9:30 AM

Research in the School of Aerospace Engineering

Dr. Adam Steinberg on Behalf of Dr. Mitchell Walker (School Chair)

Professor and Associate Chair in the School of Aerospace Engineering

DAY 1 | APRIL 10, 2025

9:50 AM

About the GT Center of Excellence in Hypersonics

Dr. Julia Kubanek

Vice President for Interdisciplinary Research

Professor in the School of Biological Sciences and the School of Chemistry and Biochemistry

10:00 AM

Welcome Remarks

Dr. Timothy Charles Lieuwen

EVPR and Regents Professor, School of Aerospace Engineering

10:10 AM

Issues and Challenges in Hypersonics (Invited Talk)

Dr. Mark Lewis

Chief Executive Officer, The Purdue Applied Research Institute, Purdue University

10:30 – 10:45 AM

Break

Take advantage of the break to explore the posters and engage with the researchers!

10:45 AM – 12:15 PM

Georgia Tech's Plans for a Hypersonic Flight Testbed called HyperSat

Chair: Dr. Krish Ahuja

GTRI Conference Center Auditorium

10:45 AM

About HyperSat

Dr. Krish Ahuja

Regents Professor, School of Aerospace Engineering

Head: Aerospace and Acoustics Technologies Division at GTRI (ATAS)

Director: GT Hypersonics Center of Excellence and Workshop Chair

11:00 AM

Invited Talk

Dr. Glenn Lightsey

*John W. Young Chair Professor and Director of the Space Systems Design Lab and of the Center for Space Technology and Research at Georgia Tech
School of Aerospace Engineering*

11:15 AM

HyperSat: Multi-Disciplinary Analysis and Optimization of an Aerobraking CubeSat with a Focus on Trajectory Design

Jehan Dastoor

*Graduate Student (Advisor: Dr. Dimitri Mavris)
School of Aerospace Engineering*

11:30 AM

HyperSat: Aerothermal Analysis and Design of an Aerobraking CubeSat

Jehan Dastoor

*Graduate Student (Advisor: Dr. Dimitri Mavris)
School of Aerospace Engineering*

11:45 AM

Design of a Thermal Protective Deployable Shield for HyperSat

Dr. John Dec

Professor of Practice, School of Aerospace Engineering

Dr. Alexis Noel

Senior Research Engineer, Aerospace and Acoustics Technologies Division at GTRI (ATAS)

12:00 PM

Preliminary Design and Analysis of the HyperSat using CubeSat Technologies

Dr. David (Nate) Ramsey

Post-doc Fellow, School of Aerospace Engineering

DAY 1 | APRIL 10, 2025

12:15 – 1:00 PM

Lunch

GTRI Conference Center, Rooms 119A, 119B, and 119C

Take advantage of the lunch break to explore the posters and engage with the researchers!

1:00 PM – 2:45 PM

Selected Hypersonics Capabilities at Georgia Tech's Academic Departments

Chair: Dr. Ani Mazumdar

GTRI Conference Center Auditorium

1:00 PM

Democratization of Advanced Manufacturing Capabilities to Enable Scale-Up of Hypersonic Systems Production

Dr. Tom Kurfess

Chief Manufacturing Officer at the Georgia Institute of Technology (GT)

Executive Director of the Georgia Tech Manufacturing Institute (GTMI)

HUSCO Ramirez Distinguished Chair in Fluid Power and Motion Control

1:15 PM

Magnetohydrodynamic Liquid Metal Cooling for Hypersonic CubeSat Reentry

Alvaro Romero-Calvo, *Assistant Professor in the School of Aerospace Engineering*

*Talk to be given by Dr. Romero-Calvo's graduate student: **Evan Sanchez***

1:30 PM

Combustion Research at Georgia Tech

Dr. Adam Steinberg

Pratt & Whitney Chair and Professor

Director – Ben T. Zinn Combustion Lab

1:45 PM

Freestanding Stationary Supersonic Combustion

Dr. Adam Steinberg

Pratt & Whitney Chair and Professor

Director – Ben T. Zinn Combustion Lab

2:00 PM

Scramjet Ignition and Flame Stabilization

Dr. Wenting Sun

Professor in the School of Aerospace Engineering

2:15 PM

CFD-in-the-loop Flight Simulation

Dr. Bradford Robertson

Senior Research Engineer, School of Aerospace Engineering

2:30 PM

CFD for Hypersonics Studies

Dr. Joseph Oeflein

Professor in the School of Aerospace Engineering

2:45 – 3:00 PM

Break

Take advantage of the break to explore the posters and engage with the researchers!

3:00 PM – 5:00 PM

Selected Hypersonics Capabilities at GTRI

Chair: Dr. Robert Funk

GTRI Conference Center Auditorium

3:00 PM

Plasma Jet for TPS Pre-screening Tests

Michael Milone

GTRI Graduate Fellow (Advisor: Dr. Krish Ahuja)

3:15 PM

Heated Flow Capability Using Propane and Hydrogen

Nick Breen

Senior Research Engineer, Aerospace and Acoustics Technologies Division, ATASL

Rob Funk

Principal Research Engineer and Associate Division Chief, Aerospace and Acoustics Technologies Division, ATASL

3:30 PM

A Model-scale Hypersonic Jet Flow and Aeroacoustics Facility under Construction at GTRI

Nehemiah Horak

Undergraduate Student Researcher, (Advisor: Dr. Krish Ahuja)

Michael Milone

GTRI Graduate Fellow, (Advisor: Dr. Krish Ahuja)

3:45 PM

CFD Capabilities, Hypersonics Trajectory Modeling Tool Development and Experience for CUI and Classified Work

Alex Forbes

Senior Research Engineer, Aerospace and Acoustics Technologies Division, ATASL

4:00 PM

Ablation Modeling

Jesus Arias

Senior Research Engineer, Aerospace and Acoustics Technologies Division, ATASL

4:15 PM

High-Temp Electromagnetic Testing

Dr. David Reid

Principal Research Engineer

Head: Electromagnetic Materials and Measurements Branch, ACL

4:30 PM

Composites and Material Testing for High temperatures and Vibratory Loads at GTRI

Dr. Jared Walker

Principal Research Engineer, Systems Development Division, ATASL

Plans for Day 2

Dr. Krish Ahuja

Regents Professor, School of Aerospace Engineering

Head: Aerospace and Acoustics Technologies Division at GTRI (ATAS)

Director: GT Hypersonics Center of Excellence and Workshop Chair

5:00 PM

Adjourn

NOTES:

DAY 1 | APRIL 10, 2025

GT/GTRI WORKSHOP IN HYPERSONICS | 2025

April 10 – 11, 2025

Please note that the 9:15 AM – 10:15 AM sessions are restricted to UCAH Members and US Citizens only. All other attendees should plan to arrive at 10:30 AM.

8:00 – 9:00 AM

Check-In

Coffee and Tea Service Along with Continental Breakfast

9:00 AM – 10:30 AM

Selected UCAH Funded Programs at Georgia Tech

Chair: Dr. George White
GTRI Conference Center Auditorium

These sessions are restricted to UCAH Members and US Citizens only.
Other attendees should plan to arrive at 10:30 AM.

9:00 AM

Introductory Remarks

Dr. Krish Ahuja

*Regents Professor, School of Aerospace Engineering
Head: Aerospace and Acoustics Technologies Division at GTRI (ATAS)
Director: GT Hypersonics Center of Excellence and Workshop Chair*

9:15 AM

Optical and Radar Characterization Techniques for Hypersonic Materials and Environments

Dr. Ellen Mazumdar

Assistant Professor in the School of Mechanical Engineering

DAY 2 | APRIL 11, 2025

9:30 AM

Thermally Aware Estimation and Guidance

Dr. Ani Mazumdar

Assistant Professor in the School of Mechanical Engineering

9:45 AM

Fault-Tolerant Adaptive Control for Hypersonic Vehicles

Anika Kansky

Graduate student

Dr. Jonathan Rogers

Professor in the School of Aerospace Engineering

10:00 AM

Multi Cooperative Control of Hypersonic Weapons for Offensive and Defensive Missions

Johnathan Corbin

Graduate student

Dr. Jonathan Rogers

Professor in the School of Aerospace Engineering

10:15 AM

Multifunctional Thermal Protection System

Dr. Satish Kumar

Professor in the School of Mechanical Engineering

10:30 – 11:00 AM

Break

Take advantage of the break to explore the posters and engage with the researchers!

DAY 2 | APRIL 11, 2025

11:00 AM – 12:20 PM

Hypersonics Work Force Development Efforts at Georgia Tech

Chair: Dr. Krish Ahuja
GTRI Conference Center Auditorium

11:00 AM

Various Work Force Development Efforts at Georgia Tech

Dr. Krish Ahuja

Regents Professor, School of Aerospace Engineering

Head: Aerospace and Acoustics Technologies Division at GTRI (ATAS)

Director: GT Hypersonics Center of Excellence and Workshop Chair

11:15 AM

Hypersonics VIP Class

Dr. David (Nate) Ramsey

Post-doc Fellow, School of Aerospace Engineering

11:30 AM

GRIP Program

Dr. Charles Domercant

Senior Research Engineer, GTRI-CTO-DO-DIR-ATL

Dr. Alexis Noel

Senior Research Engineer, GTRI-ATAS

11:45 AM

Student Run Clubs at Georgia Tech

Dr. David (Nate) Ramsey and Student Leaders of Various Clubs

Post-doc Fellow, School of Aerospace Engineering

12:05 PM

Maker Spaces at Georgia Tech

Dr. Alexis Noel

Senior Research Engineer, Aerospace and Acoustics Technologies Division at GTRI (ATAS)

DAY 2 | APRIL 11, 2025

12:20 PM

Hands-on Experience for Students in Systems Engineering in ASDL

Dr. Bradford Robertson

Senior Research Engineer, School of Aerospace Engineering

12:20 – 1:00 PM

Lunch

GTRI Conference Center, Rooms 119A, 119B, and 119C

Take advantage of the lunch break to explore the posters and engage with the researchers!

1:00 PM – 1:45 PM

Presentations by Non-GT Invitees and Areas of Potential Collaborations

Chair: Dr. George White

GTRI Conference Center Auditorium

1:00 PM

Sandia Hypersonic Boost-Glide Systems

Dr. Scott Kowalchuk

*Manager of Research & Development, Science & Engineering
Sandia National Laboratories*

1:15 PM

Overview of a Modern Software Program for Ramjet & Scramjet Design: Manta

Sam Bornstein

*Senior Aerospace Engineer
SpaceWorks*

1:30 PM

Invited Talk

Glenn Case

*Founder and the Chief Technologist of Hermeus Corporation
Hermeus*

1:45 PM

Break

Take advantage of the break to explore the posters and engage with the researchers!

2:00 PM – 3:30 PM

Topic # 1: Workforce Development

Topic # 2: Test Facilities and Measurement Capabilities

Chair: Dr. Krish Ahuja & Dr. Ani Mazumdar

GTRI Conference Center Auditorium

PANELISTS:

Dr. John Schmisser (UTSI)

Dr. Ellen Mazumdar (ME – GT)

Dr. Scott Kowalchuk (SNL)

Dr. Dimitri Mavris (ASDL – GT)

3:00 – 3:30 PM

Wrap up and Feedback for the next Workshop

3:30 PM

Adjourn

DAY 2 | APRIL 11, 2025

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THANK YOU!