



Hypersonic Vehicle Flight Prediction Workshop

June 20-22 2017 - U.S. Air Force Academy, Colorado



The purpose of the workshop is to provide a forum for the discussion of:

- Technical challenges associated with hypersonic flight prediction and methods to address them
- Critical assessments of the state of the art for hypersonic flight prediction methods
- Experiences and lessons learned
- Recommendations for:
 - Improving flight prediction methods
 - Estimating uncertainties for flight prediction
 - Risk reduction methods
- Use the results of the workshop to inform program managers & the community

The scope of the workshop includes three broad classes of hypersonic vehicles:

- Atmospheric Boost-Glide vehicles
- Airbreathing-Powered vehicles
- Entry, Decent and Landing vehicles

and all aspects of the vehicles, such as:

- Aerothermodynamics and Propulsion
- Structures and Materials
- Guidance and Controls

across the full flight trajectory of the vehicle, subsonic to hypersonic.

The scope includes all aspects of testing (both ground and flight) and methods to predict flight performance from test data and/or numerical simulations. It will also include methods to quantify uncertainties associated with predicting flight performance metrics.



Planning Team & Points of Contact:

- NASA
 - Rick Gaffney (LaRC)
 - Jeff Herath (LaRC)
 - Mike Wright (ARC)
 - Jennifer Cole (AFRC)
- Air Force
 - Jack Benek (AFRL/RQ)
 - Crystal Pasillio (AFRL/RW)
 - Ted Masternak (AFRL)
 - Ivett Leyva (AFRL/AFOSR)
 - Dick Wong (412th Test Wing)
 - Thomas Nadobny (412th Test Wing)
 - John Spravka (412th Test Wing)
 - Farid Rafla (412th Test Wing)
- Department of Energy
 - Srinivasan Arunajatesan (SNL)
 - Doug Stillman (LLNL)

Email Richard.L.Gaffney@nasa.gov by March 1, 2017 with your interest in participating



The target audience is US organizations interested in developing and flying hypersonic vehicles. In general, this includes the Department of Defense, the Department of Energy, NASA, aerospace companies and academia.

Participation in the workshop is by invitation-only to select organizations. A participating organization may have multiple attendees, but In order to encourage sharing and discussion, each organization that participates must give at least one presentation (30 minute slots, with approximately 20 minute presentations).

The workshop will include both unclassified/limited-distribution (ITAR) and classified material. All participants must be US citizens, and participants in the classified sessions must have the appropriate clearance (up to Secret?).

The format of the workshop will be a single track with classified sessions the first day followed by unclassified sessions. Each group of sessions will include a breakout session in which participants will discuss and address specific goals, such as to:

- Identify and assess current methods to predict flight performance
- Identify the technical challenges associated with predicting flight performance
- Identify methods to address the technical challenges
- Identify and assess current methods to estimate/quantify uncertainties
- Identify the level of accuracy is required for different areas
- Identify long poles in the tent (prioritize challenges by importance)
- Identify commonalities among vehicle types (where can program managers leverage work from other programs?)
- Identify risk reduction methods
- Share best practices and lessons learned