Overview of the TRMC/AFOSR Hypersonic Center of Testing Excellence

Thursday, February 16, 2017 | 4:00 p.m. | 202 Reed McDonald Building

ABSTRACT

This seminar will present an overview of the TRMC/AFOSR Hypersonic Center of Testing Excellence (Hypersonic CoTE). The Hypersonic CoTE has invigorated the hypersonic test and evaluation (T&E) workforce by creating a successful partnership between AEDC and the University of Maryland (UMD) that integrates science and technology (S&T) research with T&E relevant training. Since 2010, more than 20 students (both graduate and undergraduate) have conducted mission focused research at a primary Air Force T&E facility while working toward their degrees. By closely working with system developers, testers and researchers, CoTE occupies a key role in transmitting warfighter needs to researchers and actively promoting the transition of R&D findings to the RDT&E enterprise.

The CoTE program provides high quality Tunnel 9 data and detailed analysis to improve the understanding of hypersonic BLT and validate new modeling and simulations (M&S) tools to improve the prediction of BLT in hypersonic wind tunnels and flight. The CoTE team has made significant progress in the development of novel instrumentation to better characterize hypersonic flow fields and wind tunnel disturbances. This progress has been made possible through collaborations between AEDC, academia (UMD, Purdue, Penn State, Stevens Institute of Technology, Princeton, Texas A&M, Missouri S&T, and Virginia Tech), NASA, government laboratories (Sandia National Lab, Johns Hopkins University Applied Physics Lab and Air Force Research Lab) and industry (GoHypersonics, Ahmic Aerospace and CUBRC).

This seminar will primarily focus on the impacts of the CoTE on hypersonic BLT prediction, development of novel diagnostics, and integration of high fidelity computations to design unique experiments on a Hollow Cylinder Flare (HCF).

REFRESHMENTS WILL BE SERVED AT 3:45 P.M.
HOSTED BY DR. RODNEY BOWERSOX

Eric Marineau, Ph.D.
Chief Technologist
AEDC White Oak

Eric Marineau is currently the Chief Technologist at the AEDC Hypervelocity Wind Tunnel 9, the primary high-Mach-number / high-Reynolds-number hypersonic ground test facility serving the Air Force and Department of Defense. Dr. Marineau received his Ph.D. in Aerospace Engineering at Virginia Tech and performed postdoctoral research at Caltech investigating boundary layer transition on the NASA Orion capsule at high enthalpies in the T5 shock tunnel. As a senior research scientist at CUBRC, he developed a new high-frequency-response instrument to measure forces-and-moments on reentry capsules and hypersonic boost glide vehicles in the LENS impulse facilities. For the TRMC/AFOSR funded Hypersonic Center of Testing Excellence, he is currently leading the development of advanced non-intrusive diagnostics and performing experiments on large-scale test articles to improve the understanding and modeling of hypersonic boundary-layer transition, turbulent boundary-layers, and shockwave/turbulent boundary-layer interactions. Dr. Marineau is a research advisor for the Air Force Summer Faculty Fellowship Program (SFFP) and has served on Aerospace Engineering thesis committees at the University of Maryland and Purdue University. He has authored and coauthored more than 40 conference and journal articles and is a reviewer for the Journal of Spacecraft and Rockets, Propulsion and Power, AIAA Journal, Experiments in Fluids, and Aerospace Science and Technology. He was an invited speaker at the 19th AIAA International Space Planes and Hypersonic Systems and Technologies Conference in 2014, the 2016 AFOSR High Speed Aerodynamic Program Review and the North Atlantic Treaty Organization (NATO) hypersonic boundary-layer transition prediction working group in 2014, 2015 and 2016.