



JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Friday, November 9, 2018
3:00 PM, 132 Gilman Hall

***"BOLT Hypersonic Boundary Layer
Transition Flight Experiment"***

Presented by Dr. Bradley M. Wheaton
Johns Hopkins University - Applied Physics Laboratory

Accurate prediction of boundary layer transition is a critical issue for the design of hypersonic flight vehicles. Boundary layer transition is caused by small disturbances within the boundary layer that grow via a variety of mechanisms to cause turbulence. The physics of this process are being incorporated into new tools that can perhaps be used to predict transition on future hypersonic vehicles, however validation of these tools requires wind-tunnel and flight validation data. The Johns Hopkins University Applied Physics Laboratory is leading a large team of organizations across government, industry, and academia to design and conduct the BOLT Flight Test Experiment to obtain measurements of boundary-layer transition at hypersonic speeds via a sounding rocket flight. The measurements will be used to improve modeling and prediction tools. A 3-year grant from the Air Force Office of Scientific Research is underway to perform computational predictions of transition, measure transition in a wind-tunnel test campaign at multiple facilities, and conduct the flight experiment (scheduled for May 2020). This talk will introduce BOLT and provide an overview of ongoing activities related to computational predictions, wind-tunnel test results, and engineering challenges faced in the design of the flight experiment.