

Center for Environmental & Applied Fluid Mechanics

**Friday, March 5, 2010
11:00 a.m., 110 Maryland Hall**

“Foundational Research in Hypersonic Turbulent Boundary Layers: Validation and Interpretation of Numerical Data”

**Presented by
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We are using direct and large-eddy simulations to study hypersonic turbulent flows with the goal of understanding the interaction of turbulence with shock waves, finite-rate reactions, surface catalysis and ablation, and radiation. To do this we have developed numerical methods for low-dissipation, high-bandwidth and shock capturing, as well as implicit time integration methods, initialization procedures, and methodologies to prescribe continuous inflow conditions. We are now applying these methods to problems of interest to atmospheric hypersonic flight, supersonic combustion and access to space.

In this talk, I will discuss work on the development of numerical methods, details on the validation of numerical data against experiments, as well as novel data analysis for the interpretation and characterization of wall-bounded turbulent flows.