

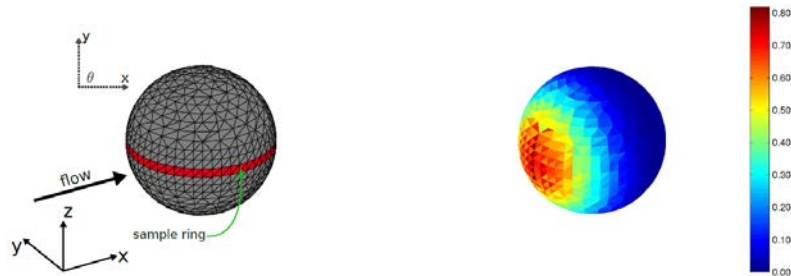


Seminar

Brian Argrow

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Satellite Drag and High-Altitude Entry Dynamics



The Neutral Atmosphere Density Interdisciplinary Research (NADIR) project was a U.S. Air Force Multidisciplinary University Research Initiative (MURI) that ran 2007-2012 with the objective “to significantly advance understanding of drag forces on satellites, including density, winds, and factors affecting the drag coefficient. ...and prediction at the “next level” of performance.” The focus of my research team was to develop altitude- and time-dependent models for the interaction of the spacecraft with the air molecules at orbital altitudes and during atmospheric entry, then to integrate those models for time-accurate entry dynamics using the Direct Simulation Monte Carlo (DSMC) to couple rarefied aerodynamics with rigid-body dynamics. Results of this research include the “Semi-Empirical Satellite Accommodation Model (SESAM)” and the Volumetric Discrete Particle (Voldipar) DSMC code. Current research is focused on the integration of advanced chemistry models into the 3D Voldipar solver with the goal to verify against data from recent flight tests of the Orion spacecraft as well as legacy flight data from the "Radio Attenuation Measurement" flight experiments (RAM C-II). Results from all aspects of this research will be presented.

Friday, November 13, 2015
2:00 PM
KOEHL 340

Refreshments!