



## AEROLOADING AND STRUCTURAL RESPONSE MEASUREMENTS IN HYPERSONIC FLOW

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Wednesday, April 12, 2023 | 3 pm

DeWalt Seminar Room  
2164 Glenn L. Martin Hall

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*Speaker*

**DR. KATYA M. CASPER**

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Sandia National Laboratories

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### ABSTRACT

Sandia National Laboratories is responsible for predicting the vibrational response of many structures to high-speed flow. This talk will give an overview of experimental efforts aimed at better understanding these fluid-structure interactions. During atmospheric reentry, hypersonic vehicles are subjected to high levels of boundary-layer pressure fluctuations that can cause vibration of internal components. Experiments were conducted to correlate the unsteady loading from turbulent spots in the transitional hypersonic boundary layer to the dominant vibrational response of a thin panel at zero angle of attack. Experimental campaigns are now being conducted to study how the aeroloading environment changes for vehicles at angle of attack. Results will also be shown for experiments studying more complex conceptual vehicles.

### BIO

Dr. Katya Casper is a principal member of the technical staff at Sandia National Laboratories in Albuquerque, NM. She develops, conducts, and manages wind tunnel experiments in support of Sandia's programs. Her work centers on high-speed experimental fluid dynamics, with a focus in hypersonic boundary-layer transition, hypersonic fluid-structure interactions, as well as fluid-structure interactions in subsonic/supersonic cavity flows. She also works to apply traditional wind-tunnel diagnostics to novel applications and testing environments at Sandia. She received her B.S. in Aerospace Engineering from North Carolina State University in 2007, her M.S. from Purdue University in 2009, and completed her Ph.D. at Purdue University in Aeronautics and Astronautics in 2012. She is the 2019 recipient of the AIAA Lawrence Sperry Award.

