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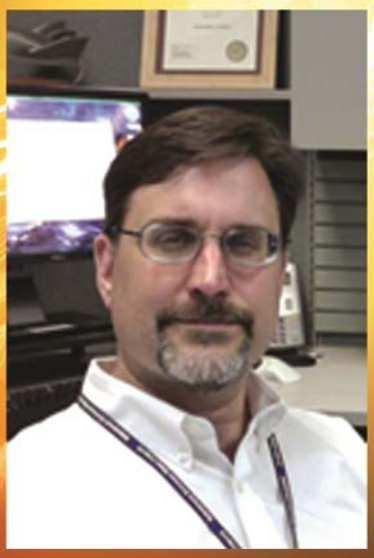

Wednesday
November 19, 2014
3:30 pm
Room 1200
EECS building

Dr. Jonathan Poggie

Air Force Research Laboratory
Wright-Patterson Air Force Base, Ohio

Numerical Modeling of Flow Control with Electrical Discharges

Flow control in the high Mach number regime is extremely challenging because of the harsh flight environment and short flow time scales. Plasma-based flow control is an appealing approach for this regime, offering the possibility of actuators with a low profile and fast response. This talk will review computational research carried out by the author in various areas of plasma-based flow control. Topics will include nanosecond-pulse dielectric barrier discharges, the magneto-hydrodynamic reentry heat shield concept, and gliding surface discharges for mitigating separation unsteadiness. Emphasis is placed on situations where a large aerodynamic effect can be obtained for a relatively small penalty in actuator weight and power consumption.

About the Speaker: Dr. Jonathan Poggie joined the Air Force Research Laboratory in 1995, after earning a Ph.D. in mechanical and aerospace engineering from Princeton University. He has unusually broad research experience, with publications in the experimental, computational, and theoretical sides of fluid mechanics and plasma dynamics. At AFRL, he is also a team leader and program manager, focusing on technology to enable flight at extremely high speed. He is interested in engineering education, serving as a research adviser to several graduate students, and teaching at the graduate level. Poggie is a Fellow of the ASME and an Associate Fellow of the AIAA.