PURDUE UNIVERSITY

School of Aeronautics and Astronautics

COLLOQUIUM

The AAE Fall 2009 Colloquium Series

Hypersonic Radiating Flows and the USAF

Dr. Bob Greendyke
Dept. of Aeronautics and Astronautics
Air Force Institute of Technology, Wright-Patterson AFB, OH

Thursday, October 29, 2009
3:00 P.M.
ARMS 1109

Abstract

The study of thermal radiation in hypersonic flowfields has experienced a new revival of interest on the part of the United States Air Force. The interest is due to a redefinition of the military's approach to threat assessment and the formulation of "Focused Long-Term Challenges," several of which mandate the need to fly in the hypersonic regime. Depending on flight trajectories used, radiative heating in hypersonic shock layers can account for more than 50% of the overall heat flux to a vehicles surface. The presentation will provide a brief overview of thermal radiation physics and previous computational efforts to simulate it in hypersonic flows, and a look at current and future simulation efforts and challenges at the Air Force Institute of Technology.

Bio: Dr. Bob Greendyke received undergraduate degrees in Economics and Business from Baylor University in 1979. He was then employed by Boeing Commercial Aircraft's 747 Division, and returned to school at Texas A&M University to receive his BS and MS degrees in Aerospace Engineering. After his MS degree, he was employed at NASA Langley's Aerothermodynamics Branch from 1988 to 1995. In 1995, he left NASA to pursue a PhD in Engineering back at Texas A&M University, receiving it in 1998. Dr. Greendyke then joined the Faculty at the University of Texas at Tyler, helping to start and establish their Dept. of Mechanical Engineering. In 2005, after promotion to Associate Professor, Dr. Greendyke left UT Tyler to join the Air Force Institute of Technology stationed at Kirtland AFB, NM as their Director of Scientist and Engineer Education Programs. He returned to professorial duties in 2007 at Wright-Patterson AFB, OH where he currently resides.

An informal coffee & cookie reception will be held prior to the lecture at 2:30 p.m. in the AAE/ARMS undergraduate lounge (directly in front of ARMS 3rd floor elevators)