Seminar Series of the

AFRL/VA and AFOSR

Collaborative Center of Control Science (CCCS)

Active Flow Control: Progress, Prospects, and Challenges

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2:00-3:00 PM, Friday, October 3, 2003, 2027 Robinson Laboratory

A Joint Mechanical Engineering and CCCS Seminar

Abstract: This talk discusses our research program in active flow control, an exciting multidisciplinary field involving fluid mechanics, transducer design, and control theory. This research field is concerned with the manipulation of flows for a myriad of applications, including flow-induced noise suppression, separation control, mixing enhancement, and drag reduction, etc. Most applied research in this area has traditionally focused on open-loop control, perhaps because of the inherent complexity of modeling dynamic systems governed by time-dependent, nonlinear, partial differential equations (the Navier-Stokes equations). This talk will consider some important issues regarding the implementation of physically realizable, real-time feedback control. Aspects of sensors, actuators, and adaptive identification/control algorithms will be discussed in the context of two examples, suppression of flow-induced cavity oscillations and control of flow separation.

Biography: Louis N. Cattafesta III is currently an Associate Professor in the Department of Mechanical and Aerospace Engineering at the University of Florida. Prior to joining UF in 1999, he was a Senior Research Scientist at High Technology Corporation in Hampton, VA, where he was the group leader of the Experimental and Instrumentation Group. He received a BS degree in Mechanical Engineering from Penn State University, a MS degree in Aeronautics from MIT, and a Ph.D. degree in Mechanical Engineering in 1992 from Penn State University. In 1992, he joined High Technology Corporation as a Research Scientist at NASA Langley Research Center. His research at NASA Langley focused on supersonic laminar flow control and pressure- and temperature-sensitive paint measurement techniques. At that time, he became involved in active control of flow-induced cavity oscillations which provoked his current research interests in active flow control and acoustics. More information regarding his research can be found at www.img.ufl.edu.