MMAE SEMINAR

MONDAY, NOVEMBER 30, 2009
E-1 BUILDING – CRAWFORD AUDITORIUM
3:30 – 4:30 PM

Filtered Density Function: Basic Theory and Modern Developments

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Abstract

A review will be provided of the state-of-the-art in subgrid scale (SGS) modeling as required for large eddy simulation (LES) of turbulent combustion. The closure complexities caused by chemical reactions are the subject of main discussion. The SGS closure based on the stochastic "filtered density function" (FDF) method is described in a greater detail. Some of the other closures are reviewed in the context of this method. LES/FDF provides a very affordable and reliable means of predicting turbulent reacting flows. Results will be presented of recent implementation of this technology for simulations of a variety of turbulent flames.

Biography

Dr. Peyman Givi is the William Kepler Whiteford Professor of Engineering at Pitt. Previously he held the position of University Distinguished Professor at SUNY-Buffalo. He has also worked as a Research Scientist at the Flow Industries, Inc. in Seattle. He has had frequent visiting appointments at several NASA centers and received the Agency's Public Service Medal (2005). He is amongst the first 15 engineering faculty nationwide who was honored at the White House to receive the Presidential Faculty Fellowship from President George H.W. Bush (1992). In 1990 he received the Young Investigator Award of the Office of Naval Research (ONR), and the Presidential Young Investigator Award of the National Science Foundation (NSF). He received Ph.D. from the Carnegie-Mellon University (PA) in 1984 and BE from the Youngstown State University (OH) in 1980, where he was named the 2004 Distinguished Alumnus by the Phi Kappa Phi honor society. He is Fellow of the APS and ASME and was named Engineer of the Year in Pittsburgh by ASME (2007).