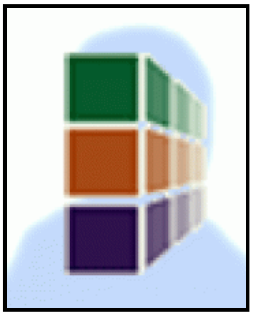

Special Guest Lectures

A Spectral/hp Element Method for Particle-Fluid Interaction

Dr. Don Liu, Louisiana Technical University

Department of Mathematics and Statistics

Johnston Hall 338
January 23, 2008 - 02:00 pm

Abstract:
An efficient method is developed to simulate the fully coupled motion involving an immersed ellipsoidal particle and the ambient fluid. This method essentially simplifies a two-phase flow problem into a single-phase fluid flow problem, and utilizes the high accuracy of a spectral/hp element method to solve the particle-fluid interaction problem. To validate the method and demonstrate the accuracy of the numerical results, theoretical results as well as simulation results from direct numerical simulations (DNS) with the spectral element method are provided for reference and comparison.

Speaker's Bio:
Dr. Don Liu is an assistant professor of mathematics at Louisiana Tech University (LTU). He received his Ph.D. (2004) and M.S. (2000) in applied mathematics from the Division of Applied Mathematics, Brown University, and his Ph.D. (1998) in thermal fluid engineering from Chinese Academy of Sciences. Prior to joining LTU, he was a postdoctoral researcher at the University of Maryland-Baltimore County and a research fellow at NASA Goddard Space Flight Center. Dr. Liu's research interests are in computational fluid dynamics, computational heat and mass transfer, numerical simulations of two phase flows, numerical simulations of micro-scale flows, and numerical analyses and solutions of partial differential equations.

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