ISTITUTO DI MATEMATICA APPLICATA E TECNOLOGIE INFORMATICHE (CNR)
DIPARTIMENTO DI MATEMATICA "FELICE CASORATI"
via Ferrata,1 – 27100 Pavia (Italia)

Seminario di Matematica Applicata

Martedì 3 Giugno 2003 alle ore 16 a Pavia, nella Sala Conferenze dell'IMATI-CNR (ex IAN), il

Prof. Thomas J. R. Hughes
(University of Texas at Austin)

terrà la conferenza:

Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation

Abstract. We present a review of progress in applying the Variational Multiscale Formulation to turbulent flows. We begin with a description of the type of engineering applications we are interested in and follow with a critical evaluation of the conventional approach to Large Eddy Simulation based upon the filtered equations. We then discuss modeling and consider the classic Smagorinsky model (inspired by Von Neumann) and the Spectral Eddy Viscosity concept of Heisenberg. With this background, we argue that numerical analysis considerations suggest a multiscale framework for modeling. We then describe the Variational Multiscale Formulation which obviates many of the shortcomings of the filtered equations and possesses enhanced potential for modeling. We then demonstrate numerically that the simplest instantiations of the idea lead to improved performance on homogeneous flows, and equilibrium and non-equilibrium turbulent channel flows. We mention in closing the results of some other investigators who have also obtained very good results with various implementations of the ideas and finally we describe current research activities.

La S.V. è cordialmente invitata.

☕ Dopo la conferenza sarà organizzato un breve rinfresco ☕