



PURDUE UNIVERSITY

Department of Mathematics Special Colloquium

Speaker: Dr. Panagiotis Stinis, Lawrence Berkeley National Laboratory
Title: "Long Memory Mori Zwanzig Models for the Euler Equations"
Date: Thursday, February 8, 2007
Time: 4:30 P.M.
Place: BRNG B232

Abstract

A long memory model for dimensional reduction, known as the t -model, is derived through the Mori-Zwanzig formalism of irreversible statistical mechanics. The model is applied to the estimation of the rate of decay of solutions of the Burgers equation and of the Euler equations in two and three space dimensions. In the Burgers case, the model captures the rate of decay exactly. For the Euler equations in two space dimensions, the model preserves energy as it should. In three dimensions, we find a power law decay in time and observe a temporal intermittency. If time permits, we will discuss briefly a hierarchy of Mori-Zwanzig models in which the t -model is the first one. This is joint work with A. Chorin, O. Hald and Y. Shvets.