Date: **October 10th, 2005 (Special Seminar)**

Time: **11:00 AM**

Location: **Latrobe Hall 106**

Speaker: **Dr. Anthony Leonard**
Graduate Aeronautical Laboratories
California Institute of Technology

Title: **"Deformation of Material Lines and Surfaces in Chaotic Flows"**

Abstract

The deformation of material lines and surfaces as they evolve in a chaotic flow is considered. Of particular interest for the case of a line are the curvature and torsion as a function of arclength along the curve. These quantities are sufficient to define the intrinsic geometry of the line. Regions of high curvature, once they start to develop, are essentially permanent, and in fact have a universal structure. Regions of high torsion, on the other hand, are transitory and correspond to a near singularity in the coordinate system of the Frenet frame rather than an exotic shape of the curve. In the case of a surface we attempt to characterize those portions that are in the vicinity of large principal curvature.