The Humboldt State University Department of Mathematics Presents:

The 48th Harry S. Kieval Lecture**

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Thursday, November 9, 2006

7:00 P.M.

Natural Resources 101

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Jerrold E. Marsden

Professor of Engineering, Control and Dynamical Systems
California Institute of Technology

"Invariant Manifolds: From Jellyfish to Spacecraft"

The notion of an invariant manifold has been a standard and powerful tool in dynamical systems theory and its applications for the last century. I will begin by reviewing this notion in concrete terms and show how it has been applied to some interesting problems, such as designing missions to our own moon and to the moons of Jupiter. For systems that are themselves changing with time, the notion corresponding to an invariant manifold is called an LCS, standing for "Lagrangian Coherent Structure". I will outline several applications for this notion, such as to ocean dynamics, spacecraft dynamics, and the swimming of Jellyfish.

**A lecture on some popular and/or broad aspects of mathematics attractive to undergraduates and the public
For More Information go to: http://www.humboldt.edu/~mathdept/HarrySKieval/kl.html