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Announcement

Forum on Chaotic Dynamics in Fluid Mechanics

La Jolla, California, July 1989

Recent developments in dynamical systems theory, especially in the context of fluid turbulence, have provided new and stimulating points of view for examining nonlinear phenomena in the engineering sciences. The advent of high-speed computers has provided the impetus and an important tool for detailed simulation of the dynamics of simple as well as more complex models. In many cases, simulations and laboratory experiments exhibit sensitive dependence on initial conditions, a hallmark of chaotic behavior. This is a generic feature that can be inherent in the behavior of deterministic nonlinear systems. Many important examples from the engineering sciences fall in this category. The existence of certain "universal" routes to chaos, realized both in analytical models and in careful experiments, has further stimulated research. The study of deterministic chaos, a highly interdisciplinary field, poses exciting challenges to researchers in many areas of engineering sciences. It is clear that a forum providing an opportunity for researchers from various disciplines for a stimulating exchange of ideas is useful and timely.

Such a forum is being sponsored by the Fluid Mechanics Committee of the ASME Fluids Engineering Division and the University of California at San Diego. The purpose will be to examine recent advances in the methods for experimental, computational, and rational/analytical studies of chaotic dynamics. The forum will concentrate on applications in the area of fluid mechanics and engineering, where a large number of interesting developments have taken place. The forum will have approximately 3 invited and 24 contributed papers. Work-in-progress sessions will also be included to allow a few additional brief presentations of the latest significant results. Sessions are planned to include, but are not limited to, the following topics: chaotic particle motion, fractal structure, low dimensional models, chaos in flow/structure interaction, coherent structure, and vortex dynamics.

For more information, please contact:

Professor K. N. Ghia, Mail Location 70
Department of Aerospace Engineering & Engineering Mechanics
University of Cincinnati
Cincinnati, Ohio 45221
Telephone: (513) 556-3243 (New)
Telephone: (513) 475-3243 (Current)

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