

FALL 2006 SEMINAR SERIES

Date: Thursday, November 16, 2006

Time: 11:00 am - 12:00 pm

Room: SL 165

Reception at 10:45 am (cookies and refreshments served)

Everyone is invited

Cryptography with Chaotic Lasers

Dr. Gautam Vemuri

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Abstract. Chaos is a dynamical phenomenon that arises in many physical, chemical, and biological systems, and also in economic models, weather and climate models, and a host of other naturally occurring as well as laboratory events. In this talk, I will give some background on the science of complexity, the phenomenon of chaos with special attention to lasers, and how we have used chaotic lasers to send messages in a secure manner.

About the Speaker. Dr. Gautam Vemuri received a B.Sc. (Honors) in Physics in 1984 from St. Stephen's College, Delhi, India, an M.S. from Brown University, Providence, RI and the Ph.D. in Physics from the Georgia Institute of Technology in Atlanta, GA in 1990. He was a Research Associate at JILA, Boulder, CO from 1990-1992, after which he joined the Physics Department of IUPUI, where he is currently a Professor of Physics, and the Chair of the Department. Dr. Vemuri's research interests are in the fields of laser physics and nonlinear optics, with special emphasis on the nonlinear dynamics of optical systems, and on atom and laser field interactions. He has published several articles on the dynamics of semiconductor lasers subject to optical feedback, as well as on the interaction of two and three level atoms with stochastic fields. Dr. Vemuri's other interests are in the field of optical imaging of biological systems, especially on the use of nonlinear microscopy for imaging. He has recently edited a special issue of the journal, Optics Communications, which is devoted to Optics in the Life Sciences. He has been on the editorial board of that journal since 1997.