



Department of Mechanical and Aerospace Engineering
Indian Institute of Technology Hyderabad
Kandi - 502285, Sangareddy, Telangana, India

MAE Seminar Series | Lecture 07



Title: Influences of Noise and Nonlinearity on Dynamic Systems
Speaker: Dr Vipin Agarwal
Affiliation: Assistant Professor, The University of Memphis, USA
Date, Time, and Venue: May 02, 2024 (Thursday), 1100-1230 Hrs., C-LH4 (Note: Online mode is not available)
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Abstract | All physical systems exhibit sources of nonlinearity and stochasticity (noise), which are often omitted in modeling due to their complexity. Although typically considered undesirable, noise and nonlinearity can, in certain contexts, synergistically enhance a system's dynamic response. This presentation will explore two main themes: 1) noise-assisted response control in nonlinear systems, and 2) nonlinear dynamics in origami-inspired structures. These areas have broad applications, including in energy harvesting, robotics, and alternative computing. The insights from these studies provide a crucial foundation for understanding real-world engineering scenarios, where external dynamic disturbances are common and can influence the behavior of mechanical structures and systems.

About the Speaker | Dr. Vipin Agarwal serves as an Assistant Professor in the Department of Mechanical Engineering at the University of Memphis, USA. He previously held a position as a Postdoctoral Research Fellow at the University of Michigan, Ann Arbor, in the same field. Dr. Agarwal earned both his B.Tech. and M.Tech. degrees in Mechanical Engineering from the Indian Institute of Technology (IIT) Kanpur. His professional journey includes significant stints at General Electric (GE), where he completed the prestigious two-year Edison Engineering Development Program (EEDP), and at ANSYS. He was awarded his Ph.D. in Mechanical Engineering from the University of Maryland, College Park.

Dr. Agarwal's research interests are diverse, focusing on nonlinear phenomena, stochastic systems, dynamics and vibrations, control, cochlear mechanics, origami engineering, and metamaterials.
