

NONLINEAR DYNAMICS: A JOURNEY THROUGH EXPERIMENTS AND COMPUTATIONS

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Dynamics of a variety of mechanical and structural systems need consideration of nonlinearities. In this talk, a collection of experiments and computations conducted to further our understanding of nonlinear dynamics will be presented. The experimental and computational findings will be explained with the help of analytical studies. Grazing dynamics, energy localization, slow-scale and fast-scale decompositions, delay dynamics, and buckling influenced oscillations will be considered to illustrate the ubiquitous presence of nonlinearity influenced phenomena across length scales. Relevance of the work to different systems in practice ranging from space structures to AFM systems to drilling systems to rotary systems will be discussed.

