

Colloquium

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Friday, April 15, 2011 at 2pm in Bell Hall 143

Bifurcation and dynamics of Nonlinear Oscillator Systems

In this talk, we are concerned with a more general nonlinear oscillator system, which includes the van der Pol oscillator and the damped Duffing oscillator etc as particular cases. We apply the bifurcation theory and the Lie symmetry method to find two nontrivial infinitesimal generators, and use them to construct canonical variables. Through the inverse transformations we establish some properties of nonlinear oscillator systems under the certain parametric conditions. Comparison with the existing results by the Poincaré-Singer Procedure is provided. Under the same parametric conditions various properties of proper solutions are analyzed accordingly.