

Lie Symmetries of a Dissipative Nonlinear System

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In this talk, we will present the invariance and integrability properties of a dissipative nonlinear system, namely the generalized Holmes–Rand nonlinear oscillator. We will show an infinite sequence of symmetries and infinite dimensional Lie algebra from the vector fields of low order symmetries for certain parameter conditions. Applications of the results to some nonlinear evolutions are also illustrated.