Abstract

Dynamical Systems with Spatiotemporal Periodicities through the Symmetries †

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Dynamical systems often contain oscillatory forces or depend on periodic potentials. Time or space periodicity is reflected in the properties of these systems through a dependence on the parameters of their periodic terms [1,2]. In this talk, it is shown that simple symmetry considerations determine how their properties depend functionally on the amplitudes and the phases of the periodic terms, regardless of whether they are classical or quantum, stochastic or deterministic, dissipative or nondissipative [3]. This formalism is applied to find the functional dependence of the expectation value of the momentum of a Bose–Einstein condensate, described by the Gross-Pitaewskii equation [4,5], when it is exposed to a bi-harmonic potential whose amplitude is periodically modulated in time. It is shown that, by using this formalism, a small set of measurements is enough to obtain the functional form for a wide range of parameters.

References

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