2002 Vol.38 No.1 pp.25-30 DOI:

Even and Odd Coherent States for Time-Dependent Harmonic Oscillator

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(Received: 2001-7-13; Revised: 2001-12-6)

Abstract: The dynamical invariant for a general time-dependent harmonic oscillator is constructed by making use of two linearly independent solutions to the classical equation of motion. In terms of this dynamical invariant we define the time-dependent creation and annihilation operators and relevantly introduce even and odd coherent states for time-dependent harmonic oscillator. The mathematical and quantum statistical properties of these states are discussed in detail. The harmonic oscillator with periodically varying frequency is treated as a demonstration of our general approach.

PACS: 03.65.-w, 03.65.Bz, 03.65.Ge
Key words: even and odd coherent states, time-dependent harmonic oscillator, dynamical invariant

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