

Quantum and Classical Exact Solutions of Harmonic Oscillator in a Time-Dependent Magnetic Field

LIANG Mai-Lin^{1,2} and LIU Li-Yan¹

¹ Department of Applied Physics, School of Science, Tianjin University, Tianjin 300072, China

² Liuhui Center for Applied Mathematics, Nankai University and Tianjin University, Tianjin 300071, China

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Abstract: In cylindrical coordinate, exact wave functions of the two-dimensional time-dependent harmonic oscillator in a time-dependent magnetic field are derived by using the trial function method. Meanwhile, the exact classical solution as well as the classical phase is obtained too. Through the Heisenberg correspondence principle, the quantum solution and the classical solution are connected together.

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Key words: harmonic oscillator; magnetic field, exact wave function, exact classical solution

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