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Parametric phenomena of the particle dynamics in a periodic gravitational wave field

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Abstract

We establish exactly solvable models for the motion of neutral particles, electrically charged point and spin particles [U(1) symmetry], isospin particles [SU(2) symmetry], and particles with color charges [SU(3) symmetry] in a gravitational wave background. Special attention is devoted to parametric effects induced by the gravitational field. In particular, we discuss parametric instabilities of the particle motion and parametric oscillations of the vectors of spin, isospin, and color charge. © 2003 American Institute of Physics.

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