

Abstract Submitted
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Electron dynamics in an inhomogeneous magnetic field ALLEN KIESTER, YURI ROSTOVTSEV, DUNCAN WEATHERS, Univ of North Texas — We study the interactions of an electron with an inhomogeneous magnetic field using the time dependent Schrodinger equation. A simulation of an initially localized electron in an axially symmetric magnetic field of increasing intensity is presented. The electron initially is placed in a uniform magnetic field with components of momentum both transverse and longitudinal to that field. The simulation explores the energy exchange mechanism between on-axis and off-axis kinetic energies for a particle in a conservative system to describe magnetic reflection from a quantum mechanical perspective and the effect of reflection on the Landau levels. Analysis of the axial kinetic energy exchange, reflection, and transmission coefficients of a Gaussian wave-packet traveling from a uniform magnetic field into an inhomogeneous is presented.

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