

EFFECTIVE MASS KLEIN-GORDON EQUATION WITH POSITION DEPENDENT MAGNETIC FIELD

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ABSTRACT. Recently, exact solutions of the classical and relativistic wave equations for the existence of an external potential have been widely studied in view of the position-dependent mass formalism. Such efforts have important applications in technology, especially in material science such as electronic properties of the semi-conductors and quantum dots. In the present study, we aim to obtain exact solutions of the Klein-Gordon equation in the presence of an exponential magnetic field via effective mass formalism. Energy eigenvalues are derived by using wave functions. The studied magnetic field and effective mass have the form $\vec{B} = B_0 e^{-\kappa x} \hat{k}$ and $m(x) = (m_0 + m_1 e^{-\kappa x})$.

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2000 *Mathematics Subject Classification*. Primary xxx, yyyy; Secondary xxx, yyyy.
Key words and phrases. Klein-Gordon equations, external fields, exact solutions.

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