

Coordinate Transformation and Exact Solutions of Schrödinger Equation with Position-Dependent Effective Mass

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Abstract: Using the coordinate transformation method, we solve the one-dimensional Schrödinger equation with position-dependent mass. The explicit expressions for the potentials, energy eigenvalues, and eigenfunctions of the systems are given. The eigenfunctions can be expressed in terms of the Jacobi, Hermite, and generalized Laguerre polynomials. All potentials for these solvable systems have an extra term V_m , which is produced from the dependence of mass on the position, compared with those for the systems of constant mass. The properties of V_m for several mass functions are discussed.

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