New exact solitary wave solutions, bifurcation analysis and rst order conserved quantities of resonance nonlinear Shr¨odinger's equation with Kerr law nonlinearity

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Abstract

The paper investigates exact solutions of the resonant nonlinear Shr¨odinger's equation (RNLSE) with Kerr law nonlinearity by using the extended direct algebraic method. Graphs of some obtained solutions are presented with dierent values of parameters to describe their propagation. In order to understand the bifurcation structure of nonlinear and super-nonlinear travelling wave solutions of the considered equation, bifurcation analysis has been practiced. Moreover, a set of non-trivial and rst-order conserved quantities are computed by multiplier approach.

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