

A Novel Method for Solving Nonlinear Whitham-Broer-Kaup Equation System

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Abstract : In this letter, a new analytical method called homotopy perturbation method, which does not need small parameter in the equation is implemented for solving the nonlinear Whitham-Broer-Kaup (WBK) partial differential equation. In this method, a homotopy is introduced to be constructed for the equation. The initial approximations can be freely chosen with possible unknown constants which can be determined by imposing the boundary and initial conditions. Comparison of the results with those of exact solution has led us to significant consequences. The results reveal that the HPM is very effective, convenient and quite accurate to systems of nonlinear equations. It is predicted that the HPM can be found widely applicable in engineering.

Keywords : homotopy perturbation method, Whitham-Broer-Kaup (WBK) equation, Modified Boussinesq, Approximate Long Wave

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