

Homotopy Perturbation Method for Solving Partial Differential Equations

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We apply a relatively new technique which is called the homotopy perturbation method (HPM) for solving linear and nonlinear partial differential equations. The suggested algorithm is quite efficient and is practically well suited for use in these problems. The proposed iterative scheme finds the solution without any discretization, linearization or restrictive assumptions. Several examples are given to verify the reliability and efficiency of the method. The fact that the HPM solves nonlinear problems without using Adomian's polynomials can be considered as a clear advantage of this technique over the decomposition method.

Key words: Homotopy Perturbation Method; Partial Differential Equations; Helmholtz Equations; Fisher's Equations; Initial Boundary Value Problems; Boussinesq Equations.