

The Solution of the Variable Coefficients Fourth-Order Parabolic Partial Differential Equations by the Homotopy Perturbation Method

Mehdi Dehghan and Jalil Manafian

Department of Applied Mathematics, Faculty of Mathematics and Computer Science,
Amirkabir University of Technology, No. 424, Hafez Avenue, Tehran 15914, Iran

Reprint requests to M. D.; E-mail: mdehghan@aut.ac.ir

Z. Naturforsch. **64a**, 420 – 430 (2009); received September 4, 2008 / revised October 14, 2008

In this work, the homotopy perturbation method proposed by Ji-Huan He [1] is applied to solve both linear and nonlinear boundary value problems for fourth-order partial differential equations. The numerical results obtained with minimum amount of computation are compared with the exact solution to show the efficiency of the method. The results show that the homotopy perturbation method is of high accuracy and efficient for solving the fourth-order parabolic partial differential equation with variable coefficients. The results show also that the introduced method is a powerful tool for solving the fourth-order parabolic partial differential equations.

Key words: Homotopy Perturbation Method; Fourth-Order Parabolic Equation.