

## **A new modification of the homotopy perturbation method**

### **ABSTRACT**

In this paper, a new modification of the homotopy perturbation method (HPM) is presented and applied to linear ordinary differential equations and nonlinear differential equations. A comparative study between the new modified homotopy perturbation method (MHPM) and the classical homotopy perturbation method (HPM) is conducted. Several illustrative examples are given to demonstrate the effectiveness and reliability of MHPM. The numerical results obtained from the MHPM and HPM are compared with the fourth-order Runge-Kutta method (RKM).

**Keyword:** New modification; Homotopy; Perturbation method