

Homotopy Analysis Method for Nonlinear Differential Equations with Fractional Orders

Yin-Ping Liu and Zhi-Bin Li

Department of Computer Science, East China Normal University, Shanghai, 200062, China

Reprint requests to Y.-P. L.; E-mail: ypliu@cs.ecnu.edu.cn

Z. Naturforsch. **63a**, 241 – 247 (2008); received October 24, 2007

The aim of this paper is to solve nonlinear differential equations with fractional derivatives by the homotopy analysis method. The fractional derivative is described in Caputo's sense. It shows that the homotopy analysis method not only is efficient for classical differential equations, but also is a powerful tool for dealing with nonlinear differential equations with fractional derivatives.

Key words: Nonlinear Differential Equation; Homotopy Analysis; Fractional Derivative.