A new numerical method for nonlinear Volterra-Fredholm integro-differential equations

Jinjiao Hou[1], Jing Niu[2], and Welreach Ngolo[1]

[1]Harbin Normal University - Songbei Campus
[2]Harbin Normal University, Harbin 150025, China
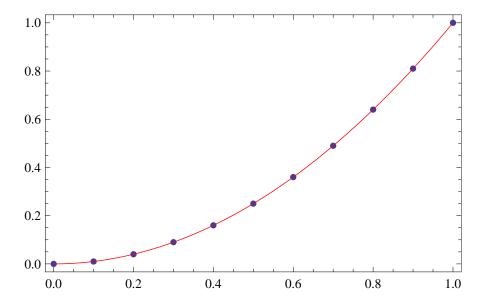
May 29, 2020

Abstract

Based on the good properties of reproducing kernel space, a new method com bining the simplified reproducing kernel method (SRKM) and homotopy per turbation method (HPM) for solving the nonlinear Volterra-Fredholm integro differential equations (V-FIDE) is proposed. The HPM can convert nonlinear problems into linear problems. And then using the SRKM to solve linear prob lems. The uniform convergence of the approximate solution is proved. Some numerical examples are prepared to illustrate the efficiency and rapidity of this method.

Hosted file

`Main Document.pdf` available at https://authorea.com/users/327790/articles/455226-a-new-numerical-method-for-nonlinear-volterra-fredholm-integro-di%EF%AC%80erential-equations

Hosted file

`Main Document.tex` available at https://authorea.com/users/327790/articles/455226-a-new-numerical-method-for-nonlinear-volterra-fredholm-integro-di%EF%AC%80erential-equations