Laplace Variational Iteration Method for Solving fractional Wave like Equations

Deepika Jain, Alok Bhargava

Department of Mathematics, Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur

Manipal University Jaipur, Jaipur

30. december 2022

This paper introduces the latest procedure for explaining certain types of fractional wave equations using the variation iteration method (VIM) and Laplace transform. The Laplace variation iteration method is a type of semi-analytical technique applied to both linear and non-linear equations without requiring linearization, discretization, or perturbation. It is not a time-consuming method and converses the solution rapidly with the exact and less error solution. This approach is delineated and then explained through several example cases. The outcomes demonstrate that this alternate strategy yields reliable outcomes and the results are displayed graphically.

1   Introduction

Mathematics, engineering, and sciences are full of amazing phenomena that can be precisely described by using mathematical techniques from fractional calculus, such as the perception of fractional order derivatives and integrals [6,14,15,19]. Differential equations of fractional order [25,26,27,28] have been gaining a lot of attention newly owing to the precise understanding of nonlinear phenomena.

1