Abstract

This work aims to solve fractional order evolution equations using Caputo-Fabrizio derivative. In our work, we studied the behavior of different evolution equations with the time-fractional Caputo-Fabrizio derivative. Furthermore, we solve these equations with an appropriate initial conditions using the semi-analytical technique, i.e, Laplace transform in combination with an iterative scheme. Using the Banach contraction principle and g-stable mapping, the stability of the implemented technique is assessed.

Chapter 1 includes a brief introduction of our work. Basic literature associated with this work is covered in chapter 2. In chapter 3, we worked on the semi-analytical technique and solved a general evolution equation. Chapter 4 consists of the acquired results that are graphed to show the impact of different values of fractional parameter χ on the physical behavior of solutions $V(x, t)$ of fractional evolution equations.