

Caputo's implicit solution of time-fractional diffusion equation using half-sweep AOR iteration

Abstract

The aim of this paper deals with the application of Half-Sweep Accelerated Over-Relaxation (HSAOR) iterative method using an unconditionally implicit finite difference approximation equation from the discretization of the onedimensional linear time-fractional diffusion equations by using the Caputo's time fractional derivative. The Caputo's implicit finite difference approximation equation leads a linear system which is solved by using the proposed HSAOR iterative method. Throughout implementations of two numerical experiments conducted, it has shown that the HSAOR method is superior as compared with FSAOR and FSOR methods