

Application half-sweep preconditioned SOR method for solving time-fractional diffusion equations

ABSTRACT

This research examines the performance of the application Half-Sweep Preconditioned SOR (HSPSOR) method together with an unconditionally implicit Caputo's time-fractional finite difference approximation equation for solving time-fractional partial diffusion equations (TFPDE's). To do it, the implicit Caputo's time-fractional approximation equations and preconditioned matrix are used to construct the corresponding preconditioned linear system. In addition to that, formulation and application the HSPSOR method are also presented. Based on numerical results of the proposed iterative method, it can be concluded that the proposed iterative method is superior to the Full-Sweep PSOR iterative methods.