Performance numerical method half-sweep preconditioned gauss-seidel for solving fractional diffusion equation

ABSTRACT

The main purpose, we derive a finite difference approximation equation from the discretization of the one-dimensional linear space-fractional diffusion equations by using the space fractional derivative of Caputo's. The linear system will be generated by the Caputo's finite difference approximation equation. The resulting linear system was then resolved using Half-Sweep Preconditioned Gauss-Seidel (HSPGS) iterative method, which compares its effectiveness with the existing Preconditioned Gauss- Seidel (PGS) or call named (Full-Sweep Preconditioned Gauss-Seidel (FSPGS)) and Gauss-Seidel (HSPGS) methods. Two examples of the issue are provided in order to check the performance efficacy of the proposed approach. The findings of this study show that the proposed iterative method is superior to FSPGS and GS. © 2020 International Information and Engineering Technology Association.