Solving time-fractional parabolic equations with the four

ABSTRACT

The goal is to show the usefulness of the 4-point half-sweep EGKSOR (4HSEGKSOR) iterative scheme by implementing the half-sweep approximation equation based on the Grünwald-type fractional derivative and implicit finite difference (IFD) method to solve one-dimensional (1D) time-fractional parabolic equations compared to full-sweep Kaudd Successive over-relaxation (FSKSOR) and halfsweep Kaudd Successive over-relaxation (HSKSOR) methods. The formulation and implementation of the 4HSEGKSOR, HSKSOR and FSKSOR methods are also presented. Some numerical tests were carried out to illustrate that the 4HSEGKSOR method is superior to HSKSOR and FSKSOR methods.