# Implementation of the ksor method for solving one-dimensional time-fractional parabolic partial differential equations with the caputo finite difference scheme title of manuscript

## ABSTRACT

This study presents numerical solution of time-fractional linear parabolic partial differential equations (PDEs) using the Caputo finite difference scheme. The discretization process is based on the second-order implicit finite difference scheme and the Caputo fractional derivative operator. The resulting system of linear approximation equations is solved using the Kaudd Successive Over Relaxation (KSOR) iterative method. A comparison is made with the Gauss-Seidel (GS) iterative method through three numerical examples. The results demonstrate that the KSOR method requires fewer iterations and reduced computational time compared to the GS method.