

A new Quarter-Sweep Arithmetic Mean (QSAM) method to solve diffusion equations

Abstract

The aim of this paper is to introduce the Quarter-Sweep Arithmetic Mean (QSAM) method using the Quarter-Sweep Crank-Nicolson (QSCN) finite difference method for solving one-dimensional diffusion equations. The formulation of the QSAM method is developed by combining the concept of the quartersweep iteration and the Arithmetic Mean (AM) method known as one of two-step iterative methods. The QSAM method has been shown to be very fast as compared to the standard AM method. Some numerical tests were included to support our statement.