

Quarter-sweep improving Modified Gauss-Seidel Method for Pricing European Option

Abstract

The aim of this paper is to examine the application of the Quarter-Sweep Improving Modified Gauss-Seidel (QSIMGS) method in evaluating European option which governed by Black-Scholes partial differential equation (PDE). Quarter-sweep Crank-Nicolson approach is applied to approximate the PDE. Then, the generated linear system is solved by using the IMGS method. Some numerical experiments for a family of Gauss-Seidel (GS) methods such as Gauss-Seidel, Modified GaussSeidel (MGS) and Improving Modified Gauss-Seidel (IMGS) methods are performed with each full-, half-, and quarter-sweep iterations. Thus, from the numerical results obtained, we can show that the QSIMGS method is the most effective method