

The halfsweeps multigrid method as a fast multigrid Poisson solver

ABSTRACT

The idea of halfsweeps iterative method (introduced by A. R. Abdullah, 1991) is used to develop the halfsweeps multigrid method to solve the 2-D elliptic partial differential equation with the Dirichlet boundary conditions. The method is shown to be very much faster compared with the fullsweeps multigrid method due to M. M. Gupta et al, 1995. Some numerical experiments are included to confirm our recommendation.

Keyword: Elliptic equation; Fullsweeps- and halfsweeps-multigrid method; Performance evaluation