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A Comparative Study of High Order Rotated Group Iterative Schemes on Helmholtz Equation

Authors : Norhashidah Hj. Mohd Ali, Teng Wai Ping

Abstract : In this paper, we present a high order group explicit method in solving the two dimensional Helmholtz equation. The presented method is derived from a nine-point fourth order finite difference approximation formula obtained from a 45-degree rotation of the standard grid which makes it possible for the construction of iterative procedure with reduced complexity. The developed method will be compared with the existing group iterative schemes available in literature in terms of computational time, iteration counts, and computational complexity. The comparative performances of the methods will be discussed and reported.

Keywords : explicit group method, finite difference, helmholtz equation, rotated grid, standard grid
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