Electronic Transactions on Numerical Analysis.
Volume 6, pp. 106-119, December 1997.

ISSN 1068-9613.

ETNA
Kent State University
etna@mcs.kent.edu

MULTIGRID ALGORITHM WITH CONDITIONAL COARSENING FOR THE NON-ALIGNED SONIC FLOW*

BORIS DISKIN†

Abstract. A multigrid approach using conditional coarsening in constructing solvers for non-elliptic equations on a rectangular grid is presented. Such an approach permits the achievement of a full multigrid efficiency even in the case where the equation characteristics do not align with the grid. The 2D sonic-flow equation linearized over a constant velocity field has been chosen as the model problem. An efficient FMG solver for the problem is demonstrated.

Key words. multigrid methods, conditional coarsening, sonic flow, non-alignment.

AMS subject classifications. 65N55, 76H05, 76M20.

* Received May 14, 1997. Accepted June 26, 1997. Communicated by J. Dendy.
† Department of Applied Mathematics and Computer Science, The Weizmann Institute of Science, Rehovot, Israel.