

BENCHMARKING AGGREGATION AMG FOR LINEAR SYSTEMS IN CFD SIMULATIONS OF COMPRESSIBLE INTERNAL FLOWS *

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Abstract. The performance of parallel implementations of three fundamentally different aggregation AMG (algebraic multigrid) solvers, including novel k-cycle methods, for systems of linear equations appearing in industrial CFD simulations are examined. The results show that the k-cycle methods are a good choice for cases with less than 20000 unknowns per process if the cost of the setup tends to become critical; for most other applications, however, established methods proved to be equally efficient or superior.

Key words. algebraic multigrid, fluid dynamics, finite volumes, pressure-velocity coupling

AMS subject classifications. 15A06, 65F08, 76G25

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