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SCALABLE ALGEBRAIC MULTIGRID ON 3500 PROCESSORS*

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Abstract. A parallel algebraic multigrid linear solver method is presented which is scalable to thousands of processors on significant classes of two- and three-dimensional problems. The algorithm is entirely algebraic and does not require prior information on the physical problem. Scalability is achieved through the use of an innovative parallel coarsening technique in addition to aggressive coarsening and multipass interpolation techniques. Details of this algorithm are presented together with numerical results on up to several thousand processors.

Key words. algebraic multigrid, AMG, parallel computing, simulations, scalable, linear solvers, parallel coarsening

AMS subject classifications. 65F10

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