A PARALLEL AMG FOR OVERLAPPING AND NON-OVERLAPPING DOMAIN DECOMPOSITION*

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Abstract. There exist several approaches for the parallel solving of huge systems of linear equations resulting from the finite element (f.e.) discretization of 2nd order elliptic pdes. On the other hand, there exists a great demand for Algebraic Multigrid solvers (AMG) which have as input only matrix and right hand side or, as a substitute, the appropriate information per element. In this paper we propose a general parallel AMG algorithm using overlapping or non-overlapping data decompositions.

Key words. algebraic multigrid, parallel algorithms, domain decomposition, iterative solvers.

AMS subject classifications. 65F10, 65N22, 65Y05.