

PRECONDITIONING TECHNIQUES IN DOMAIN DECOMPOSITION

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One route to the solution of large sparse linear systems in parallel scientific computing is the use of numerical methods that combine direct and iterative methods. These techniques inherit the advantages of each approach, namely the limited amount of memory and easy parallelization for the iterative component and the numerical robustness of the direct part. Among the possible approaches, the oldest are probably the domain decomposition techniques that are very often considered as a preconditioner for a Krylov subspace solver. The purpose of this minisymposium is to discuss some recent developments in the field of preconditioning techniques in domain decomposition with their application to the solution of linear system arising from the discretization of PDEs or some of their algebraic extension for the solution of general sparse linear systems.

The lexicographical list of speakers with the title and co-authors of the proposed talks is given below:

A FULLY AUTOMATIC PARALLEL GMRES SOLVER PRECONDITIONED BY A MULTIPLICATIVE SCHWARZ ITERATION

G.-A. Atenekeng-Kahou^{1,2}, E. Kamgnia¹ and B. Philippe²

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PARALLEL RESOLUTION OF SPARSE LINEAR SYSTEMS BY MIXING DIRECT AND ITERATIVE METHODS

J. Gaidamour³, P. Hénon³, J. Roman³ and Y. Saad⁴

³ Labri - INRIA, centre de Bordeaux - Sud Ouest, France – ⁴University of Minnesota, USA.

PARALLEL ALGEBRAIC ADDITIVE SCHWARZ PRECONDITIONERS FOR SCHUR COMPLEMENT SYSTEMS IN 3D

L. Giraud⁵ and A. Haidar⁶

⁵ ENSEEIH-IRIT, Toulouse, France – ⁶ CERFACS, Toulouse, France.

IMPROVING THE PARALLEL PERFORMANCE OF A DOMAIN DECOMPOSITION PRECONDITIONING TECHNIQUE IN THE JACOBI-DAVIDSON METHOD FOR LARGE SCALE EIGENVALUE PROBLEMS

M. Genseberger⁷

⁷ CWI, The Netherlands.

PRECONDITIONERS FOR PROBLEMS WITH EXTREME CONTRAST IN THE COEFFICIENTS

F. Nataf⁸

⁸ University Pierre et Marie Curie, France.

TOWARDS A RIGOROUSLY JUSTIFIED ALGEBRAIC PRECONDITIONER FOR HIGH-CONTRAST DIFFUSION PROBLEMS

R. Scheichl⁹ and I. Graham⁹.

⁹ Bath University, UK.

ON THE CONVERGENCE OF ALGEBRAIC OPTIMIZABLE SCHWARZ METHODS WITH AP-
PLICATIONS TO ELLIPTIC PROBLEMS

D. Szyld¹⁰ and S. Loisel¹⁰

¹⁰ Temple University, USA

AITKEN ACCELERATION OF THE CONVERGENCE OF THE SCHWARZ METHOD WITH NEUMANN-
DIRICHLET CONDITIONS ON ARTIFICIAL BOUNDARIES TO SOLVE PROBLEM OF DARCY
FLOW WITH STRONG CONTRAST ON THE PERMEABILITIES

D. Tromeur-Dervout¹¹

¹¹ University of Lyon, France.

DEFLATION ACCELERATION OF BLOCK ILU PRECONDITIONED KRYLOV METHODS

C. Vuik¹² and R. Nabben¹³

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many.

Because of the agenda constraints of some of our speakers, we would be grateful if the sessions of this minisymposium could be scheduled either on March the 17th or 19th.