

Some notes on the article “Schwarz preconditioned CG algorithm for the mortar finite element”

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Numer. Algorithms 58, No. 2, 235–260 (2011).

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Last update: Tuesday 3rd January, 2012; the article contains many useful information deserve to be read

Abstract: The author considers a simple and efficient Schwarz preconditioner for solving systems of algebraic equations. These systems arise for instance when solving second order elliptic problems using mortar finite element. The author proposes several versions of a hybrid (multiplicative) Schwarz preconditioner for the solution of the second order elliptic problem with jump coefficients using mortar finite elements on nonmatching meshes.

For the effective implementation of the preconditioner, it is proposed to use a variant of the preconditioned conjugate gradient method. In fact, the overall algorithm serves as a framework for effective implementation of a class of hybrid Schwarz preconditioners so that the cost per iteration is kept minimal. The preconditioners are scalable with respect to the number of subdomains, and insensitive to jumps of the coefficients.

Key words and phrases: Schwarz preconditioned; mortar finite element; Non-matching meshes; Discontinuous coefficients

Subject Classification: 65N30; 65F10; 65N55

References

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