Boundary Element Tearing and Interconnecting Methods

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In this talk we give an overview on boundary element tearing and interconnecting methods, which are on one hand the counter part of the well established finite element tearing and interconnecting (FETI) methods, but which on the other hand give new possibilities in the construction of efficient preconditiong techniques.

The solution of the local boundary value problems is described via the symmetric formulation of boundary intgral equations, while the discretization is done by using fast boundary element methods, i.e., the fast multipole methods.

Based on the hypersingular boundary integral operator an appropriate global preconditioner is constructed. Finally we describe and discuss a new allfloating formulations. Numerical results will be given.

This talk is based on joint work with U. Langer, G. Of, and W. Zulehner.

[1] O. Steinbach: *Stability Estimates for Hybrid Coupled Domain Decomposition Methods*, Springer Lecture Notes in Mathematics, vol. 1809, 2003.

[2] U. Langer, O. Steinbach: *Boundary element tearing and interconnecting methods*, Computing 71 (2003) 205-228.

[3] U. Langer, G. Of, O. Steinbach, W. Zulehner: *Inexact data-sparse boundary element tearing and interconnecting methods.*, Berichte aus dem Institut für Mathematik D, TU Graz

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