

FETI-DP methods for DG discretization of elliptic problems with heterogeneous coefficients and non-matching meshes

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We consider a second order elliptic equation with heterogeneous coefficients. The domain is defined as a geometrical conforming non-overlapping decomposition of substructures. Inside each substructure, a triangulation and a conforming finite element method are introduced. To handle non-matching meshes across substructure interfaces, we consider a DG discretization based on a symmetrized interior penalty method for discontinuous coefficients.

In the talk we discuss preconditioned iterative solvers based on FETI-DP methods. It is proved that the methods are almost optimal and their rate of convergence are independent of the parameters of triangulation, the number of substructures, and jumps of the coefficients across interfaces and inside substructures.