Domain decomposition methods for heterogeneous diffusion problems discretized by the finite element cell-centered scheme

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Abstract

In this talk, we construct two non-overlapping, domain decomposition methods for solving anisotropic second-order elliptic problems discretized by the finite element cell-centered scheme. The first method is a generalization of the Steklov-Poincar operator and the second method is an extension of the optimized Schwarz algorithms. For each method, discrete interface problems are derived and convergence of the associated iterative algorithms is proved. Two-dimensional numerical experiments are carried out to investigate the performance of the two methods.