Leszek Marcinkowski, Talal Rahman
Uniwersytet Warszawski, Wydział Matematyki, Informatyki i Mechaniki

Adaptive average Schwarz method for Crouzeix–Raviart discretization of multiscale elliptic problem

In our talk we present an extension of the average Additive Schwarz Method for nonconforming Crouzeix–Raviart discretization of a second order elliptic problem in two dimensions with highly varying coefficients. We proposed larger enriched coarse space constructed by a simple procedure which enables us to enrich the coarse space of the classical average ASM for CR discretization by the local spaces spanned by eigenfunctions of specially defined local problems. The new coarse space allows us to obtain the same bounds on condition number of the parallel average Schwarz preconditioner as in the classical average additive Schwarz method for conforming P 1 element which was proposed by Bjørstad, Dryja, Vainikko in 1990s.