Additive Average Schwarz with adaptive Coarse space for Morley FE

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We propose an additive average Schwarz preconditioner with two proposed adaptively enriched coarse spaces for the nonconforming Morley finite element method for fourth order biharmonic equation with highly varying and discontinuous coefficients. In this paper, we extend the work of (L. Marcinkowski: Additive average schwarz with adaptive coarse spaces: scalable algorithms for multiscale problems). Our analysis shows that the condition number of the preconditioned problem is bounded indecently of the jump of the coefficient.

Keywords: domain decomposition preconditioner, additive average Schwarz method, adaptive coarse space, multiscale finite element.