

Local Nonsymmetric Smoothers

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In this talk, we present some local multilevel algorithms for solving linear systems arising from adaptive finite element approximations of nonsymmetric and indefinite elliptic boundary value problems. Two types of local smoothers are constructed. It is shown that the local multilevel methods are optimal, which means that the convergence rates of the local multilevel methods are independent of mesh sizes and mesh levels. Numerical experiments are reported to confirm our theory. From our numerical experiments, we can observe that our local multilevel methods work very well for certain convection-diffusion problems. This talk is based on a joint work with Huangxin Chen.