

A TWO-LEVEL METHOD FOR MIMETIC FINITE DIFFERENCE DISCRETIZATIONS OF ELLIPTIC PROBLEMS

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We present a two-level method for mimetic finite difference approximations of second order elliptic boundary value problems. We prove that the two-level algorithm is uniformly convergent, *i.e.*, the number of iterations needed to achieve convergence is uniformly bounded independently of the characteristic size of the underlying partition. We also show that the resulting scheme provides a uniform preconditioner with respect to the number of degrees of freedom. Numerical results that validate the theory are also presented.