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Abstracts of Short Communications and Posters

Section:

15. Numerical Analysis and Scientific Computing

1991 MS Classification: 65N55
Pflaum, Christoph, Institut für Angewandte Mathematik und Statistik
Robust Multilevel Algorithms for Elliptic Differential Equations
It will be presented robust multilevel algorithms for anisotropic elliptic equations and a special class of convection diffusion equations. The multilevel algorithms use semi-coarsening, line-relaxation, prewavelets, and prewavelet like functions. It is proved that the convergence rate of the multilevel cycle is smaller than 0.2 independent of the number of unknowns, the size of the anisotropy, and the size of the convection term. The convection term has to be y-direction (or x-direction). The convergence rate is smaller than 0.2 also in case of strongly varying coefficients in y-direction, some non H^1-elliptic equations and a convection term with a changing convection direction.