

## Multigrid Methods for Finite Elements

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Multigrid Methods for Finite Elements combines two rapidly developing fields: finite element methods, and multigrid algorithms. At the theoretical level, Shaidurov justifies the rate of convergence of various multigrid algorithms for self-adjoint and non-self-adjoint problems, positive definite and indefinite problems, and singular and spectral problems. At the practical level these statements are carried over to detailed, concrete problems, including economical constructions of triangulations and effective work with curvilinear boundaries, quasilinear equations and systems. Great attention is given to mixed formulations of finite element methods, which allow the simplification of the approximation of the biharmonic equation, the steady-state Stokes, and Navier--Stokes problems.

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