

Maximum Norm Estimates for Neumann BVP on Graded Meshes

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This talk deals with the numerical computation of the numerical solution of boundary value problems with Neumann boundary conditions in polygonal domains using the finite element method. Due to the singularities in the neighborhood of corners of the domain, the convergence rate of the numerical solution can be lower than in case of smooth domains. As a remedy one can use local mesh refinement near the singular points and in order to prove optimal error estimates regularity results in weighted Sobolev spaces are exploited. In such a case the convergence rate of $|\ln h|^{3/2}h^2$ using piecewise linear ansatz functions can be shown. Similar results for boundary value problems with Dirichlet boundary conditions were obtained by Th. Apel, A. Rösch and D. Sirch.

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