

REGULARITY ESTIMATES FOR ELLIPTIC BOUNDARY VALUE PROBLEMS IN BESOV SPACES

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ABSTRACT. We consider the Dirichlet problem for Poisson's equation on a nonconvex plane polygonal domain Ω . New regularity estimates for its solution in terms of Besov and Sobolev norms of fractional order are proved. The analysis is based on new interpolation results and multilevel representations of norms on Sobolev and Besov spaces. The results can be extended to a large class of elliptic boundary value problems. Some new sharp finite element error estimates are deduced.

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