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A CUT FINITE ELEMENT METHOD WITH BOUNDARY VALUE CORRECTION FOR MODELLING KIRCHHOFF PLATES

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In this contribution we propose a boundary value correction method, based on an approach due to of Bramble et al. [1], for a C^1-continuous finite element method on rectangular elements cut by the boundary, extending earlier results for Poisson's equation [2] and Stokes' equation [3]. With boundary value correction we may use only a piecewise linear approximation of the boundary and still obtain optimal order convergence. The boundary value correction is a modified Nitsche formulation involving a Taylor expansion in the normal direction compensating for the approximation of the boundary. This enables us to prove a priori error estimates with explicit dependence on the meshsize and distance between the exact and approximate boundary.

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