

ISOGEOMETRIC ANALYSIS FOR DOMAINS WITH CORNERS

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Isogeometric analysis (IGA) based on the non-uniform rational B-spline (NURBS) basis functions provides an effective integration between computer aided geometry design (CAGD) and the finite element method (FEM). This method can effectively reduce the error of geometric discretization and significantly improve the computational accuracy. Moreover, it is very easy to construct higher-order smooth continuous NURBS basis functions. This paper extends IGA to solve the Laplace equation whose domain contains the reentrant corners. The physical field is constructed by the same NURBS basis functions as the representation of the geometric model. The governing equation is discretized using the standard Galerkin method. Repeated control points and multipatch are proposed for IGA whose domain contains the reentrant corners. For multipatch case, knot vectors and control points must coincide on the interface of different patches, even after refinement. C^0 -continuity across the patch interfaces can be maintained. Here we present several numerical examples to show that our method can approximate the singular solutions in domains with corners.

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