

NURBS-Enhanced Finite Element Method (NEFEM) for electromagnetic scattering problems

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An improvement to the classical finite element (FE) method is presented. It is able to exactly represent the geometry by means of the usual CAD description of the boundary of the computational domain with non-uniform rational B-splines (NURBS). For elements not intersecting the boundary, a standard FE interpolation and numerical integration are used. But elements intersecting the NURBS boundary need a specifically designed piecewise polynomial interpolation and numerical integration. Some electromagnetic scattering examples are given using a discontinuous Galerkin formulation, demonstrating the applicability of the proposed strategy and the superiority of the NEFEM in front of standard high-order isoparametric FE.