

New Quadrature in Isogeometric-Galerkin 2D Boundary Elements Method.

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ABSTRACT

Following the recent approach for fast formation of matrices in IgA-Galerkin [1, 2] we propose weighted quadrature with ad-hoc exactness for the construction of the discrete counterpart of Isogeometric-Galerkin Boundary Elements Method. IgA-Galerkin BEM has been proposed in [3, 4] and has the great advantage that only the description of the boundary is needed and all the computation is made on the boundary. On the contrary, singular integrals appear. The proposed approach uses some of the properties of B-splines - namely local support, global regularity, recursive formulae and interpolation properties - in order to gain optimal convergence rate and good ratio between computational effort and accuracy. In particular, the treatment of the singularities appearing in the formulation is solved by exactness requirement on the quadrature via modified moments [5].

The research is part of a collaboration with prof. A. Aimi and M. Diligenti from U. of Parma, prof. A. Sestini from U. of Firenze, prof. M.L. Sampoli from U. of Siena and prof. G. Sangalli and M. Tani from U. of Pavia.

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