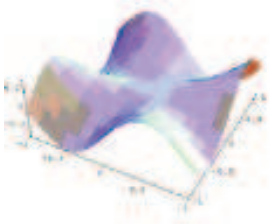
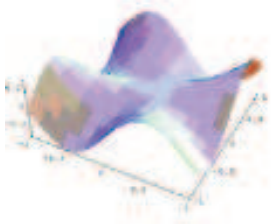


Seminário



A DISCONTINUOUS FINITE ELEMENT METHOD AT ELEMENT LEVEL APPLIED TO HELMHOLTZ EQUATION WITH MINIMAL POLLUTION

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Abstract. *A discontinuous finite element formulation is presented for Helmholtz equation. Continuity is relaxed locally in the interior of the element instead of across the element edges. Discontinuities are introduced locally, inside each element, through C1 shape functions associated with interior nodes. The interior shape functions can be viewed as discontinuous bubbles and the corresponding degrees of freedom can be eliminated at element level by static condensation yielding a global matrix topologically equivalent to those of classical C0 finite element approximations. A crucial point of the discontinuous formulation relies on the choice of the stabilization parameters related to the weak enforcement of continuity inside each element. Explicit values of these stabilization parameters minimizing the pollution effect are presented for uniform meshes. The accuracy and stability of the proposed formulation for bilinear shape functions are demonstrated in several numerical examples.*

Keywords: *Discontinuous bubbles, Helhmoltz equation, Stabilization, Discontinuous finite element method*

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