On inf-sup conditions and projections in the theory of mixed finite-element methods

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Abstract

We indicate constraints on the space of finite elements providing the validity of discrete inf-sup conditions and the existence of projections specific for mixed finite-element methods. We consider both conformal and nonconformal approximations. We suggest a definition of special projections onto the vector space of finite elements which provides their existence under quite general conditions without determining the degrees of freedom of the elements. © 2014 Pleiades Publishing, Ltd.