FINITE ELEMENT APPROXIMATION OF THE THREE-FIELD ELASTICITY PROBLEM STABILIZED WITH ORTHOGONAL SUBSCALES

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The purpose of this talk is to present a stabilized finite element method for the numerical approximation of the three-field elasticity problem, using as unknowns displacement, stress and strain. The main idea is to split these unknowns into their numerically resolvable component and a subscale, whose effect on the finite element component needs to be approximately accounted for. We assume that the subscales are orthogonal (in a certain sense) to the finite element space. Several combinations are possible, depending on whether a particular subscale is taken as zero or not. In particular, some methods already proposed in the literature can be recovered within the framework to be described.