STABILIZED METHODS FOR REISSNER-MINDLIN PLATES

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We consider stabilized finite element methods fort the Reissner-Mindlin plate model. The starting point is a stabilized mixed formulation by Tom Hughes and Leo Franca (CMAME 1987). In previous works we have shown that the auxiliary variable, the shear force, can be analytically eliminated leading to a stable method in displacement variables, i.e. deflection and rotation. As for the HF method, this formulation is optimally convergent when the polynomials used for the deflection are one degree higher than those for the rotation. In a joint work with J. Schöberl we have shown that the method allows the use of multi-grid algorithms in primal variables.
Together with M. Lyly we have shown that equal order approximations can be used if the MITC reduction operator is used for the shear strain. We also use results obtained in collaboration with M. Lyly and J. Niiranen to shown that the approximation of the deflection can be raised one order by a simple local postprocessing technique.
Finally, we use results developed with Lovadina, Niiranen and Beirao da Veiga to design a posteriori estimates for all methods.