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**Resultant fields for mixed plate bending elements.** (English) Zbl 0743.73031

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A mixed formulation is introduced for plate bending finite elements based upon the Reissner-Mindlin plate theory. The Hellinger-Reissner variational principle is applied. The formulation introduces an explicit coupling between interpolations of the shear and moment stress resultant fields. In this connection the resulting elements are free of shear locking and possess the correct rank as proved and demonstrated by the numerical results. The coupling term introduced is consistent with the Reissner-Mindlin plate theory. Both the CRB1 and CRB2 elements presented in this paper yield good results for thin and thick plates.

Reviewer: [Z.Dzygadło \(Warszawa\)](#)

#### MSC:

**74S05** Finite element methods applied to problems in solid mechanics

Cited in 14 Documents

**74K20** Plates

**74S30** Other numerical methods in solid mechanics (MSC2010)

**74P10** Optimization of other properties in solid mechanics

#### Keywords:

[coupling](#); [interpolations of shear](#); [moment stress resultant fields](#); [complete polynomial expansion](#); [frame invariant elements](#); [Reissner-Mindlin plate theory](#); [Hellinger-Reissner variational principle](#); [thin and thick plates](#)

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