

A Simple Isoparametric Finite Element Based on the Reddy's Theory for the Laminated Plates Bending Analysis

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Abstract : The aim of this work is to develop a quadrilateral finite element based on Reddy's third order shear deformation theory for the bending behavior analysis of composite laminated plates. The element is a C0 four-nodded isoparametric with seven degrees of freedom at each node, three translation components, two rotations and two higher order rotational degrees. In particular, selective numerical integration is introduced in order to improve the results and to alleviate the locking phenomenon. The performance and reliability of the proposed formulation are demonstrated by comparing the author's results with those obtained using the three-dimensional elasticity theory, analytical solutions and other advanced finite element models.

Keywords : Ajout mot cléThird Order Shear Deformation Theory, Ajout mot cléLaminated Composite Plates, Ajout mot cléFinite Element, Bending Behavior