STATIC ISOGEOMETRIC ANALYSIS OF LAMINATED COMPOSITE PLATES BASED ON DIFFERENT EQUIVALENT LAYER THEORIES

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Abstract

Isogeometric analysis (IGA) is an extension to conventional Finite Element Method (FEM) developed with the idea of unifying Computer Aided Design (CAD) and Computer Aided Analysis (CAE) into an efficent methodology for structural design and optimization. The isogeometric formulation of finite elements is based on NURBS (non-uniform rational B-splines) basis functions of varying degree, the same functions that are used in CAD for geometry definition. In this way, operation of mesh generation in IGA is unnecessary since the geometry that is defined as parametric representation of NURBS is used for representation of field variables.

Behavior of laminated plate elements based on isogeometric formulation and different kinematic models is presented and different aspects of implementation are discussed. Chosen numerical examples highlight the advantages of the isogeometric laminated plate elements over the conventional finite element formulation of laminated plates.

Keywords

Isogeometric Analysis, Laminated Composite Plates, Interlaminar Stresses

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