

Rayleigh-Ritz Method

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ABSTRACT

A numerical model for the analysis of the free vibration of multilayered rectangular plates is proposed. The model is based on a displacement field that assumes a non-linear distribution of the in-plane displacements with respect to the thickness coordinate and a transverse displacement that is constant through the plate thickness. The mathematical problem is solved by Ritz method, which relies on the minimization of the maximum Lagrangian functional, using a displacement field defined by beam functions in the form of finite series with undetermined parameters. By deleting the higher order terms of Reddy's displacement field or assuming Love-Kirchhoff hypothesis, the first order shear deformation and the classical plate theory models, respectively, are also obtained. The results will be presented for plates with different boundary conditions, and aspect ratio of 1 and 2, compared with other.

Keywords: RITZ METHOD, LOVE-KIRCHHOFF HYPOTHESIS

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