

عنوان مقاله:

FREE VIBRATION ANALYSIS OF STIFFENED LAMINATED COMPOSITE PLATES UNDER AXIAL LOADS

محل انتشار:

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خلاصه مقاله:

In this study, the free bending vibration of orthotropic laminated composite plates with stiffeners subjected to axial loads is carried out using first shear deformation theory and finite element method. Effect of axial tension and compression loads on the natural frequencies of the structure is investigated. Adding stiffeners under the plate increases the natural frequency. The displacements are based on C0 -nine plate bending element and each node has three degree of freedom. Effect of both shear deformation and rotary inertia are implemented in the modeling of plate. The equations of motion are derived using Hamilton's principle. Results indicate the tension loads and stiffeners will increase the natural frequency while the compression loads reduce the natural frequency. The buckling force of plate is computed by increasing the absolute value of compressive force until the natural frequency tends to zero. Results of simple cases are compared with finding in literature and good agreements were achieved.

کلمات کلیدی:

free vibration, stiffened plate, natural frequency, finite element, axial load

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