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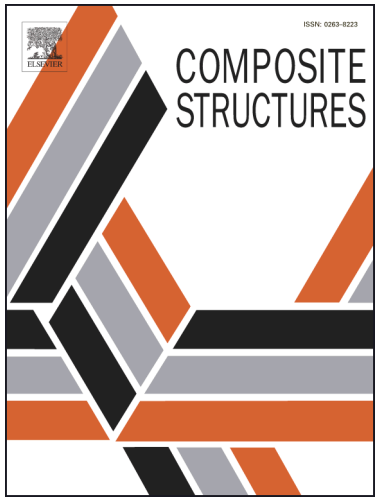

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Free vibration analysis for composite laminated doubly-curved shells of revolution by a semi analytical Method

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ABSTRACT

In this paper, a unified Jacobi-Ritz method is present to analyze the free vibration of composite laminated doubly-curved shells of revolution with general boundary conditions. The composite laminated doubly-curved shells of revolution are divided into their segments in the axial direction, and the theoretical model for vibration analysis is formulated by applying first-order shear deformation theory. The Jacobi polynomials along the axial direction and the standard Fourier series along the circumferential direction make up the displacement functions of shell segments. The boundary conditions at the ends of the composite laminated doubly-curved shells of revolution and the continuity conditions at two adjacent segments were enforced by penalty method. The results including frequency parameter and mode shapes of composite laminated doubly-curved shells of revolution are easy obtained by Ritz method. The major advantage of presented solutions for solving the vibration characteristics of composite laminated doubly-curved shells of revolution is no need to change the mathematical model or the displacement functions. The accuracy and reliability of the proposed method are verified by the results of literature and finite element method

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