SM13S_12531

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Thermo-Mechanical Stability and Vibration Analysis of Composite Shells

J. Girish, **Lingadahally S. Ramachandra**

Department of Civil Engineering, Indian Institute of Technology, Kharagpur, India

The present study is focused on postbuckling and postbuckled vibration analysis of curved panels subjected to thermo-mechanical loading. The formulation is based on the modified Sander's theory incorporating the geometric nonlinearities. The higher-order shear deformation displacement field used in the present study accounts for parabolic distribution of the transverse shear strains through thickness of the shell and tangential stress-free boundary conditions on the boundary surfaces of the shell. The multi-term Galerkin's technique is used to obtain the true postbuckled shape of the shell and postbuckled frequencies and associated modeshapes. Numerical results are presented for composite panels with and without initial geometric imperfections. The modal participation of each mode in the postbuckling deflection is presented using multi-term Galerkin's procedure. The results show the thermo-mechanical load interaction on buckling, limiting points and snap-through buckling.

View the extended summary