

Buckling under imposed displacement of hybrid composite pipes

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Abstract : The thin composite structures that are widely used due to their high mechanical characteristics become unstable when loaded with heat or mechanical loads leading to buckling which has become a major problem. Our study focuses on the study of the buckling behavior of laminated composite pipes, carbon fiber / epoxy matrix reinforced with layers of aluminum, hybrid composite materials that call. To this end, we considered a structure composed of two layers of aluminum alloy 2024 T6 and 12 ply composite T700 whose stratification is ordered as follows [A / (? /-?) C6 / A]. An analysis of buckling induced by imposed displacement was carried out, using the finite element method. The results show that buckling load factor decreases with increase of the fibers inclination angle and it increases with increasing thickness of the fold, but from 2mm, this latter become almost stable.

Keywords : Buckling; hybrid composite, Pipe, notch, finite element analysis.