

An Analysis of Postbuckling Behavior of Angle-Ply Laminated Curved Plates under Biaxial Compression

by

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Abstract

Because of their high specific strength and stiffness, fiber-reinforced plastics is used as structural members in various fields, and hence analysis of thin laminated structures is important. Postbuckling behaviors of laminated plates under axial compression have been discussed by many researchers. However, little research has been performed on the postbuckling behavior of laminated curved plates. In this paper, the stability condition of CFRP angle-ply laminated curved plates under biaxial compression and which are simply supported along four edges is determined using Galerkin's method. The postbuckling behavior is proven analytically, and the effects of various factors, such as the dimensions of the curved plate, biaxial compressive ratio, deflection pattern and average axial shortening, are clarified.

Keywords: Structural analysis, Composite materials, Angle-ply laminated curved plates, Biaxial compressive load, Postbuckling behavior

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