

Modeling of the onset of delamination and its propagation in a laminate composite

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Abstract

Nowadays, the material composite are used by many industries. There are used in various fields such as aeronautics and aerospace ..., for their highly innovative mechanical properties. However, the defects are probably producing, during fabrication or use. It is therefore important to inspect composite structures to ensure their integrity. So it is necessary to be able to predict realistically the effect of an impact on edge and to be able to predict the damage of the structures and then their residual behavior. This paper presents a numerical simulation model of low velocity impact induced damage onset and evolution in composite laminate with carbon fiber and epoxy matrix. Currently, for impact modeling in composite structures at low and high speeds is used mainly Finite Element Method (FEM). In this work the FEM for normal impact were created in ABAQUS/Explicit. The final results obtained show a good correlation with published results.

Keywords:

Composite laminate, low velocity impact, finite element, ABAQUS/Explicit.