

Effect of uniform distributions of bonded and debonded fibers on the growth of the fiber/matrix interface crack in UD laminates with different fiber contents under transverse loading

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Abstract

A set of criteria is proposed to predict the initiation and propagation of fiber-matrix interface debonds and the transition to collective mesoscopic behavior in the form of transverse cracks. It features:

- a group of deterministic equations to determine the driving quantities of the fracture process: Energy Release Rates and dilatational energy;
- a set of probabilistic expressions to quantify the random distributions of critical values.

1. Introduction