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**The effect of fibre bridging on the Paris relation for mode I fatigue
delamination growth in composites**

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Abstract

Fibre bridging plays an important role in fatigue delamination growth in composite materials. It decreases the crack growth rate significantly with the increase of delamination length. In this paper, it is demonstrated how the Paris relation depends on the amount of fibre bridging. For this purpose, both parameters n and C in the Paris relation, are described as function of the crack extension $a-a_0$, as a measure to quantify the contribution of fibre bridging. It appears that the parameter n only depends on the stress ratio and remains independent on the amount of fibre bridging. The parameter C depends on both the stress ratio and crack extension. The obvious difference in trends between both stress ratios indicates that a method incorporating the contribution of fibre bridging in the Paris relation requires extensive data sets.

Keywords: Fatigue; Delamination; Fibre bridging; Composite laminates

1. Introduction

The increase in use of advanced composite materials in both space and aviation

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