
A new incremental fatigue crack propagation model accounting for history effects under complex thermomechanical loading

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Abstract

The proposed fatigue crack propagation model incorporates the effects of history induced by complex thermomechanical loading. While inspired by the work supervised by Sylvie Pommier (1-2), it differs in its formalism and the set of phenomena it seeks to predict.

The model is formulated incrementally over time, eliminating the concept of cycles, although it is possible to draw a parallel with certain cyclic propagation models (3). Key history effects discussed include overload and underload effects, as well as their interactions. Additionally, some history effects arise from temporal variations in temperature. The study aims to introduce the developed formalism and explore correlations between experimental results and the model's predictions.

References:

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