Surface crack growth prediction under fatigue load using probabilistic S-version finite element model

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ABSTRACT

The objective of this paper is to recognize the probabilistic distribution of crack growth and stress intensity factor for surface crack. A model with surface crack is subjected to arbitrary constant-amplitude loads. The model is analysed using probabilistic S-version finite element model (ProbS-FEM). In order to decide the probabilistic distribution, Latin hypercube sampling is embedded with ProbS-FEM. Simulation model is compared with experimental specimens. The specimens are prepared and investigated for fatigue testing. Good agreement between predictions, experiments, and previous numerical solutions shows that the developed approach can serve for a realistic reliability analysis of three-dimensional engineering structures.immune response stimulation, and to debate on the interaction between vaccines and global interventions to end TB.

Keywords: S-version finite element model Crack growth Surface crack Stress intensity factors