K-S Test for Crack Increment in Probabilistic Fracture Mechanics Analysis

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Abstract:
Crack increment is a phenomenon in fracture mechanics. It is occurred due to the stress concentration at the imperfection material. Thus, it leads a crack to growth. Then, the crack will reach to a critical crack length before catastrophic failure could occur. Before the catastrophic failure occur, the cracked structure can be fully utilised until the crack reach to the critical crack length. Thus, it is crucial to investigate the behaviour of the crack increment in fracture mechanics. The main objective of this paper is to model the crack increment in fracture mechanics analysis via Kolmogorov-Smirnov test. The modelling requires a collection of crack data through experimental work. Then, the data was evaluated based on Kolmogorov-Smirnov test. The results show that the crack increment can be modelled as a certain type of distribution.

Keywords: Carboxymethyl cellulose (CMC); Runge-Kutta Fehlberg; Copper (Cu)

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