

Various parameters of the multiaxial variable amplitude loading and their effect on fatigue life and fatigue life computation

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Abstract

The paper discusses various partial solutions used for estimating fatigue life under variable amplitude multiaxial loading in the high-cycle fatigue domain. The concurring effects are treated, and their proposed solutions are commented upon. The major focus is on the categories of the phase shift effect and of cycle counting, and on the scope and quality of data, which support discussed theories. Results of own new experimental data set on specimens from S355 steel are provided. Fatigue life estimates for McDiarmid and Findley multiaxial methods and for two different methods of load path decomposition to cycles are shown to highlight some of the points open for discussion. It is concluded that the available experimental data are not sufficient to substantiate a clear decision to follow a definite algorithm.

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