On the application of Dang Van criterion to rolling contact fatigue

H. J. Desimone¹, A. Bernasconi², S. Beretta²

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ABSTRACT

In this note, the problem of the calibration of the Dang Van multiaxial fatigue criterion is addressed. The discussion is based on uniaxial fatigue tests performed with different stress ratios. Results show that the usual technique for calibrating the constants of the Dang Van criterion does not agree with experimental evidence, especially for negative stress ratios.

For this reason, a different fatigue failure locus made of two straight line segments is proposed and typical three-dimensional rolling contact stress histories are analyzed using the traditional and proposed methods. Results show that the conventional technique does not agree with knowledge coming from shakedown approaches of rolling contact while the proposed method seems to constitute a more appropriate limit.

¹ Tenaris
² Politecnico di Milano
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