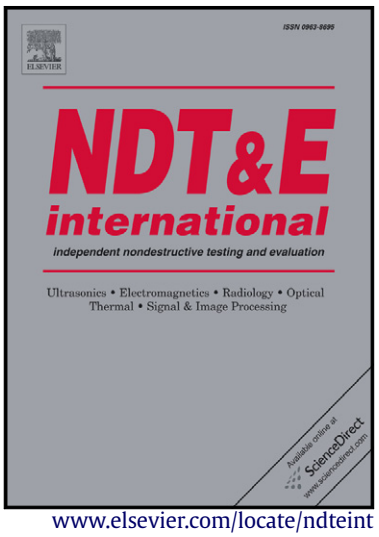

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Investigation into eddy current pulsed thermography for rolling contact fatigue detection and characterization

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Abstract:

This paper reports on the use of eddy current pulsed thermography (ECPT) for detection and characterization of rolling contact fatigue (RCF). Detection mechanisms with eddy currents and heat propagation effects were discussed with RCF modeled as a simple angled defect. Two different angled defects were studied through numerical simulations and experimentally by using uniform magnetic field (UMF) excited by Helmholtz coils. Finally, a rail sample with RCF defects was inspected using UMF excitation. It is shown that ECPT with UMF excitation provides an efficient and robust method to detect angled defects, compared with nonuniform magnetic field (NUMF) excitation.

Keywords: eddy current pulsed thermography, rolling contact fatigue, Helmholtz coils, nondestructive evaluation

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