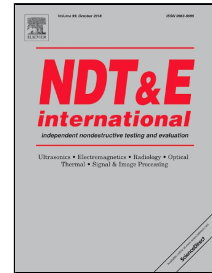


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# Solenoid model for visualizing magnetic flux leakage testing of complex defects

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## Abstract

Magnetic flux leakage (MFL) techniques are widely used for nondestructive testing of ferromagnetic materials. An analytical model of the MFL field is essential for precise determination and reconstruction of defects. In this paper, we proposed a solenoid model based on magnetization mechanisms of the magnetic medium to explain the MFL principle and simulate the MFL field. By introducing the interaction of solenoids and the Jiles–Atherton model, this model can accurately calculate the MFL field of complex defects, particularly the field distortion caused by the coupling of the defect's

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