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Using the skin effect to estimate cracks depths in mettalic structures

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Abstract:
This paper is concerned with the characterization of depth profiles defects in mettalic structures. Experimental work using giant magnetoresistors (GMR) scanning automatically a mettalic plate with eddy currents induced by an excitation coil has been carried out and is described. The results are analyzed in comparison with the simulation results obtained with a commercial finite element model for some test cases.

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Contents

I. Introduction

Non Destructive Testing (NDT) using eddy currents is an established technique in several domains. Some applications worth mentioning are the detection of fatigue cracks in aircraft metallic structures, in metallic tubes subject to high pressures or even in the metallic bars used to reinforce concrete structures [1]–[4]. However, although eddy-current nondestructive testing proved to be a reliable method for crack detection, it is only recently that the possibility of crack characterization with this technique has begun to be fully explored [5].

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