

Abstract

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Predicting acoustic emission attenuation within solids by using a ray tracing technique in 3D modelling

Acoustic Emission is a non destructive testing and monitoring technique that can be applied to a wide range of situations for condition monitoring and fault diagnosis in mechanical systems and components. The aim of this research is to verify the capability of predicting the attenuation of AE by using 3D solid modeling and a ray tracing technique to simulate wave propagation. A preliminary simulation model is developed to create the necessary algorithms and tools for AE ray-tracing. Experimental measurements are used to verify the simulation results. This paper discusses the results of the simulation and the experimental measurements, which show good agreement.