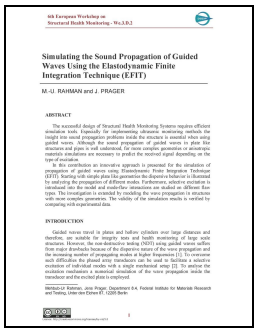

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Simulating the Sound Propagation of Guided Waves Using the Elastodynamic Finite Integration Technique (EFIT)

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The successful design of Structural Health Monitoring Systems requires efficient simulation tools. Especially for implementing ultrasonic monitoring methods the insight into sound propagation problems inside the structure is essential when using guided waves. Although the sound propagation of guided waves in plate like structures and pipes is well understood, for more complex geometries or anisotropic materials simulations are necessary to predict the received signal depending on the type of excitation.

In this contribution an innovative approach is presented for the simulation of propagation of guided waves using Elastodynamic Finite Integration Technique (EFIT). Starting with simple plate like geometries the dispersive behavior is illustrated by analyzing the propagation of different modes. Furthermore, selective excitation is introduced into the model and mode-flaw interactions are studied on different flaw types. The investigation is extended by modeling the wave propagation in structures with more complex geometries. The validity of the simulation results is verified by comparing with experimental data.

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Ключевые слова:

Содержание