عنوان مقاله:

Crack Diagnosis in Beam Structures Using Propagated Lamb Waves and Hilbert Huang Transformation

محل انتشار:

دومین کنفرانس بین المللی و هشتمین کنفرانس ملی مهندسی ساخت و تولید (سال: 1386)

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خلاصه مقاله:

This paper is a numerical simulation and verification of health monitoring of beam structures using propagating piezo-actuated lamb waves. The goal of this research is to detect the location of a linear crack in a beam using a piezoelectric actuator/impact hammer and a piezoelectric sensor based on the time-of-flight of propagating waves. The actuation signal is first determined based on the propagating lamb wave modes in a thin structure and group dispersion curve of an aluminum plate. The commercial finite element code (ABAQUS) has been employed to model a beam with an actuator-sensor pair and a tiny groove representing the crack. After a transient dynamic analysis, the sensor response has been acquired. Using Hilbert Huang Transform (HHT) method, from the timeenergy spectrum of sensor response and propagating wave time-of-flight, location of the crack has been detected

کلمات کلیدی:

Piezoelectric, Lamb wave, Hilbert Huang Transformation, Time of Flight