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Study of Anti-Symmetric Flexural Mode Propagation along Wedge Tip with a Crack

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Abstract : Anti-symmetric wave propagation along the particle motion of the wedge waves is known as anti-symmetric flexural (ASF) modes which travel along the wedge tips of the mid-plane apex with a small truncation. This paper investigates the characteristics of the ASF modes propagation with the wedge tip crack. The simulation and experimental results obtained by a three-dimensional (3-D) finite element model explained the contact acoustic non-linear (CAN) behavior in explicit dynamics in ABAQUS and the ultrasonic non-destructive testing (NDT) method is used for defect detection. The effect of various parameters on its high and low-level conversion modes are known for complex reflections and transmissions involved with direct reflections and transmissions. The results are used to predict the location of crack through complex transmission and reflection coefficients.

Keywords : ASF mode, crack detection, finite elements method, laser ultrasound technique, wedge waves
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