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## ELASTIC PROPERTY CHARACTERIZATION OF STRUCTURAL SOLIDS USING CONTACT ULTRASONICS

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### Abstract

In recent years a great deal of effort has gone into developing nondestructive methods to determine the elastic properties of composites and other structural materials. This is due to the fact that efficient and accurate information on the elastic properties can be used to characterize certain types of internal defects and degradation in structural materials. Ultrasonics using immersion methods has played an important role in this effort due to its cost effectiveness and ease of use. However, the issue of the practical implementation of these methods have not been addressed adequately. We have designed a series of contact type experiments in an effort to develop a practical test method for field applications. The method is based on the use of a transmitter and an array of several receivers to transmit and record waves at different propagation directions in a plate-like specimen. The recorded data is analyzed to determine the velocity of both bulk and guided waves in the specimen and these are then inverted to yield the elastic properties of the specimen. The advantages and disadvantages of the method are discussed.