

## NON-DESTRUCTIVE TESTING AND ASSESSMENT OF CONCRETE

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#### **Abstract:**

Concrete is a very common material for civil structures, and various methods are available for testing concrete structures. Among them, ultrasonic testing methods are excellent as they are applicable non-destructively to detect and evaluate not only surface defects but also inner defects, and they are easy to be used on site. However, since concrete is a composite material composed of fine and coarse aggregate bonded together with cement, ultrasonic waves show complicated behavior for propagation and scattering in concrete. In this talk, several published papers are reviewed for ultrasonic non-destructive testing applied to concrete. Then, some numerical analysis and experiment are shown for wave propagation in concrete, and imaging techniques for an inner defect in concrete are described. In addition, advanced techniques using nonlinear ultrasonic characteristics and guided waves to evaluate integrity of concrete structures are introduced.

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