ACOUSTICS2008/2203
Chirplet Transform Analysis for Ultrasonic Inspection of Composite Materials

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In this work, a successive parameter estimation algorithm based on the chirplet transform is presented. The chirplet transform is used not only as a means for time frequency representation, but also to estimate the echo parameters, including the amplitude, time-of-arrival, center frequency, bandwidth, phase, and chirp rate. We initially apply this method to simulated signals with additional structural noise. These signals contain several echo defects, closer between them. This stage permits to see the robustness of the developed algorithm. Thereafter, we validate all simulated results by experimental results obtained on composite material with and without delamination defects.