

Phased array B-scan image enhancement based on continuous wavelet transform and Shannon energy algorithm

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Abstract : In this work, we describe a novel algorithm for ultrasonic phased array signal enhancement, based on continuous wavelet transform using the Mexican Hat wavelet mother (CMHWT) and normalized Shannon Energy (SE). The use of signal processing algorithms in defect detection gives generally very satisfactory results. Time-frequency analysis methods are mainly used to improve the defects detection resolution. Performance improvement is confirmed when the proposed approach is tested with B-scan signals containing delamination closer to the front face. This work has successfully demonstrated that the proposed method can improve the quality of ultrasound B-scan signal.

Keywords : phased array, Defects enhancement, CWT, Shannon energy, Mexican hat wavelet