Phased array B-scan image enhancement based oncontinuous wavelet transform and Shannon energyalgorithm

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

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