

Master 2015

Marvin-John Gow

Entwicklung und Verifizierung von Prüfstrategien zur Detektion von Fehlstellen in Faserverbundplatten mittels LAMB-Wellen.

ABSTRACT - Masterthesis

The topic of this master thesis is the detection and localisation of imperfections in carbon fibre reinforced plastic and aluminium plates via LAMB-waves. The LAMB-waves are emitted and received by piezo wafer active sensors. Imperfections are being simulated using reversible methods without actually damaging the plates. A gap in the damping clay at the edge of the plate simulates a crack. A puddle of water and a stack of magnets are two methods of simulating imperfections like delamination and internal damages.

The difference in the signals with and without imperfections is evaluated. A wavelet-transformation with a single scale of 203 is used to transform the signal in order to reduce noise and bias. Afterwards, the difference between the envelopes of the wavelet-transformation is analysed. These differences are then used to detect and locate the imperfections.