Damage localisation in a stiffened composite panel

ABSTRACT

This work was conducted as part of the Aircraft Reliability Through Intelligent Materials Application (ARTIMA) European Union project. It presents a case study of damage detection in a curved carbon-fibre reinforced panel with two omega stiffeners which was investigated using ultrasonic Lamb waves. The statistical technique of outlier analysis was used here as a way of pre-processing experimental data prior to damage classification. Multilayer perceptron neural networks were used here for both classification and regression problems of damage detection. It was then investigated whether using wavelet analysis to perform prior wavelet decompositions of experimental data could facilitate damage classification.