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Classification of defects by the SVM method and the Principal Component Analysis (PCA).

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Abstract: Analyses carried out on examples of detected defects echoes showed clearly that one can describe these detected forms according to a whole of characteristic parameters in order to be able to make discrimination between a planar defect and a volumic defect. This work answers to a problem of ultrasonics NDT like Identification of the defects. The problems as well as the objective of this realized work are divided in three parts: Extractions of the parameters of wavelets from the ultrasonic echo of the detected defect - the second part is devoted to principal components analysis (PCA) for optimization of the attributes vector. And finally to establish the algorithm of classification (SVM, Support Vector Machine) which allows discrimination between a plane defect and a volumic defect. We have completed this work by a conclusion where we draw up a summary of the completed works, as well as the robustness of the various algorithms proposed in this study.

Keywords : NDT, PCA, SVM, Ultrasonics, wavelet