COMPARING MOTHER WAVELET SELECTION CRITERIA FOR ROAD PAVEMENTS NDT MONITORING

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ABSTRACT
Wavelet-based methods for structural health monitoring (SHM) of structures are an essential tool for signal analysis capable of detecting signal changes associated with faults or malfunctions. Although they are among the most suitable tools for signal singularities identification, their success strictly depends on the Mother Wavelet (MW) chosen during the analysis. Consequently, this study aims at setting up and comparing methods for choosing the "best" MW. The acoustic signals data set was experimentally collected from a properly loaded road pavement with different structural conditions (variable crack percentage), using an NDT electronic system. Results show that the best MW is a function of the signals and that an optimal choice can really improve the effectiveness of the NDT SHM method. This is a crucial factor for the detection of a pavement hidden cracks and for the improvement of pavement management systems (PMSs).