Filtering of Seawall GPR Signal by means of Multi-Wavelet Transform

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Abstract

Background noise is and will always be an issue accompanying any type of ground-penetrating-radar (GPR) data acquisition and processing. Filtering is sometimes important for GPR data interpretation. In this paper, the principle and the characteristic of a multi-wavelet filter are presented briefly. And then the steps required to filter a GPR signal using a multi-wavelet filter are presented. The image changes of two theoretical models from the forward-calculated image to that of mixed with noise and that processed using a multi-wavelet-filter show that a multi-wavelet filter can be an effective tool for GPR signal filtering. As an example the field GPR signals of a seawall exhibiting water leakage were processed using a multi-wavelet transform. And the processed result is interpreted. The interpreted result facilitated the smooth completion of seawall waterproofing treatment.
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References


Index Terms

Computer Science

Signal Processing
Keywords

Ground-penetrating radar (GPR); multi-wavelet transformation; filter; noise reduction, signal processing