

## Estimation of the Dispersion Curve for Soil Layers with Lateral Heterogeneity Using Continuous Wavelet Transform

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The MASW method is the normal method regarding surface wave testing, but it requires 12 or more receivers to measure the phase velocity for statistical redundancy. Therefore, the SASW method has potential for use because only two receivers are required. A time-frequency domain analysis is used to extract a dispersion image of Rayleigh waves and select a dispersion curve from the seismic signals of two receivers during surface wave testing. The signals are transformed by continuous wavelet transform, and the products of the transformed signals of the two receivers are summed at the same slowness over the intercept time to construct a dispersion image. This method is unnecessary empirical judgment in the unwrapping of phases and a significant number of receivers. To examine the applicability of the method on evaluating the dispersion curve for soil layers with lateral heterogeneity, three synthetic examples and an experience example of surface wave testing are discussed. The method is applicable for extracting a dispersion image for lateral heterogeneity soil layers. A high-resolution dispersion image is generated in this study by increasing the interval of the receivers. The result of the experience example was in accordance with that of the borehole data.

Keywords: Dispersion curve, Continuous wavelet transform, Lateral heterogeneity