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Analysis of Transient Seismic Signals Using Wigner-Ville Distributions

Todays increased computing power of even a simple desktop computer makes it feasible to routinely use new methods for analysing or detecting transient seismic signals. Here we compare time-frequency representations of surface waves using the Wigner-Ville distribution (WVD) with other typically employed methods, such as the multiple filtering technique (MFT) used to measure group velocities. Initial results suggest WVD to be at least as good as MFT at measuring dispersion curves, albeit at a greater computational expense. Both MFT and WVD generally work well for teleseismic events and at longer periods. However, these conditions may be considered ideal, as the waveforms are nicely dispersed and signal to noise ratio is good. We are therefore particularly interested in how the methods compare in less optimal conditions, and will present our latest findings on this matter at the conference.

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