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Seismic pattern recognition by Wavelet based-higher order statistics

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Abstract

In this work we develop an approach for detecting nonlinearity in chaotic dynamical systems using the higher order statistics and wavelet analysis. A special attention is paid to the consideration of three-wave interaction in a quadratically coupled medium. The knowledge of nonlinearities allows one to extract order parameters both for reconstruction of a dynamical system and for the study of transient processes between oscillatory regimes. To demonstrate a power of this approach we verify the latter for real data coming from the seismology. © 2005 American Institute of Physics.

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Keywords

Artificial explosion, Bicoherence, Earthquake, Higher order statistics, Tricoherence, Wavelet