

A new blind deconvolution approach for the separation of seismic waves

In this paper we propose a new approach for the separation of different seismic waves (mainly P and S) which is based on the blind deconvolution of the signals provided by an array of seismic sensors. For this, we model the signal provided by each sensor by a noisy convolutive mixture of different seismic waves, where the noise signal, which we consider a source in its own right, is not necessarily stationary and white as in most works existing. In addition, unlike most of these recent works, which proposed for our mixing model (which is a model of a MIMO system) methods of blind separation of sources that require several assumptions about the sources and filters of mixing, we use a method of blind deconvolution based on subspace techniques for a SIMO (Single Input Multiple Output) system only, which requires a lot less assumptions and is more efficient. The results of our tests on artificial mixtures and some real mixtures of seismic signals are very encouraging.

Primary author: SAYLANI, Hicham (Université Ibn Zohr)

Presenter: SAYLANI, Hicham (Université Ibn Zohr)

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