



## **Single station, high resolution estimation of the seismic source time function: Application to the Kursk's explosion**

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Since the work of Aki (1969), it has been recognized that the energy spectra of coda waves is proportional to the power spectra of the source. Based on the theory of coda waves and on the spectral factorization methods, we propose a high resolution estimation technique of the source time function of a seismic event from only one record. Furthermore, contrary to classical seismological methods, this technique is able to provide us the seismic source time function without no knowledge of the crustal structure or the Green function source-station. Applied to the seismic recordings of the Kursk's wreck, this method gives a source wavelet very similar to the theoretical shape of an underwater explosion, allowing us to assess its depth and power. This approach could be used in the general case of diffusive waves, and it opens up an entire new field of application of the new blind deconvolution methods.

Aki, K., (1969). Analysis of the seismic coda of local earthquakes as scattered waves. *Journal of geophysical research*, 74: 615-631.