

# -site Estimation of the Arrival Time of an Acoustic, Seismic or Hydroacoustic Strongly Distorted Signals

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In this paper we conduct a study of on-site estimation of the time of arrival (ToA) strongly distorted acoustic signals. Propagation of the acoustic waves from sources is controlled by a complex interplay between source location, winds, temperature, humidity, atmospheric attenuation, and topography, which are the main factors that lead to signal distortion. An algorithm was developed (usable on-site) that uses several ways of filtering signals and has the ability to estimate ToA without relying on cross-correlation of signals or their pseudo sequences. Wavelet signal analysis and the fourth order cumulant are used in order to better extract the useful signal. The ToA values obtained in this way were successfully evaluated in algorithms for acoustic localization at large distances.

## Promotional text

The concept of on-site time of arrival (ToA) estimation allows to significantly reduce data transfer to the central computer and enables ToA value estimation to be performed on signals with higher sampling rates, significantly improving quality and accuracy of the estimation.

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## Oral preference format

in-person

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Analysis of Seismic, Hydroacoustic and Infrasound Monitoring Data