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An algorithm for determining the moment of occurrence of changes in the environment that are non-linear and / or non-Gaussian in nature

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This paper analyzes the possibility of applying higher - order statistics - third - order cumulants for isolation and autonomous determination of the moment of physical change in the observed environment. The proposed methods and algorithm make it possible to analyze all those phenomena: sound, infra sound, seismic and others that are essentially non-linear and non-Gaussian. As a result of the application of the algorithm, information was obtained about the occurrence of a given change, as well as the time when it happened precisely in an autonomous way. The application of the algorithm is important in all cases when the occurrence of events is stochastic and when it is necessary to provide constant monitoring and control without a man in the loop. The algorithm is especially important in all cases where it is necessary to register characteristic events that occur at relatively large distances from measuring sensors and when the information about the phenomenon is significantly distorted due to the processes that occur during transmission through medium: attenuation, multi path transmission and others.

Promotional text

When monitoring various phenomena that can occur in the natural environment, we pay special attention and interest to stochastic phenomena, which by their nature can be natural and/or artificial explosions, earthquakes, waves and the like. To monitor these processes, different se

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