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Characteristics of Vibroacoustic Signals in Diagnosing Early Stages of Defects

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We are considering certain properties of transformation of time series that register the actual physical process. Our goal is to define these basic features of the data analysis itself that ensure that the processing applies to the properties of a phenomenon which generates the signal independently of its numerical representation and could be used for early recognition of new type factors and components of the source. It turns out that the information concerning that physical process may be find in some distribution of vector values determined by the time series. This characteristics of a vibroacoustic signal, could be used in diagnosing early stages of defects. As we observe in many experiments the structure of histograms approximating the distribution functions of disturbed signal are in many cases more susceptible to changes than Fourier spectrum. Especially the low energy disturbances, poorly visible in Fourier spectrum may be detected as the evolution of the described here random variable and its moments.

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