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Markov and non-Markov processes in complex systems by the dynamical information entropy

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Abstract

We consider the Markov and non-Markov processes in complex systems by the dynamical information Shannon entropy (DISE) method. The influence and important role of the two mutually dependent channels of entropy alternation (creation or generation of correlation) and anti-correlation (destroying or annihilation of correlation) have been discussed. The developed method has been used for the analysis of the complex systems of various natures: slow neutron scattering in liquid cesium, psychology (short-time numeral and pattern human memory and effect of stress on the dynamical taping-test), random dynamics of RR-intervals in human ECG (problem of diagnosis of various disease of the human cardio-vascular systems), chaotic dynamics of the parameters of financial markets and ecological systems.

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