



华侨大学系统科学研究所

Institute of Systems Science, Huaqiao University

学术报告

Scaling and Memory

Sumiyoshi Abe 教授

日本三重大学

华侨大学高端外国专家

报告摘要:

The brain activity and seismicity share a remarkable similarity. The Gutenberg-Richter law describing a power-law relation between the frequency of earthquake occurrence and released energy has its counterpart in the brain activity of a patient with epilepsy, where the distribution of fluctuations of the voltage difference measured by electroencephalogram (EEG) also obeys a Gutenberg-Richter-like power-law relation. However, the similarity in the distributions does not directly tell us if the processes underlying these intermittent phenomena are memoryless (i.e., Markovian) or not. Here, a simple new method is developed for quantitatively evaluating (non)Markovianity and then is applied to seismicity and the fluctuations of the voltage difference in EEG data. It is found that the seismic process is memoryless, whereas the process of EEG signals is significantly memoryful.

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