Asymptotic recurrence quantification analysis

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The notion of recurrence plays a fundamental role in the theory of dynamical systems. A powerful way for visualization of recurrence, called recurrence plot, was introduced by Eckman, Kamphorst and Ruelle in 1987. A few years later, Zbilut and Webber established the recurrence quantification analysis (RQA) by introducing measures of complexity, such as recurrence rate or determinism. Since then, RQA proved to be useful in a wide area of disciplines, ranging from life and earth sciences, engineering, material sciences, finance and economics, to chemistry and physics.

In the talk we introduce asymptotic RQA characteristics and we show their basic properties. Then we focus on the determinism and its relationships to various properties of dynamical systems. We also present some examples with nontrivial determinism.