



Center for Soft Matter and Biological Physics

Discussion Meeting

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“Nonlinear Dynamics and Chaos: Fractals and Strange Attractors”

Friday, August 23, 2019

1:30pm - 2:30pm

304 Robeson Hall

The emergence of deterministic chaos in many nonlinear systems, including the Lorentz map and the logistic map, is closely related to the existence of strange attractors - nontrivial closed subsets of the phase space, fractal in nature, to which nearby trajectories are converging. In order to gain a deeper insight into the patterns of the system evolution and its chaotic behavior, we need to study the main properties and geometric characteristics of the strange attractors. In the first part of the talk, I will define and provide basic examples of fractals, and then discuss the notion of fractional dimensionality and the various ways to measure it. In the second part, we will consider the simple examples of strange attractors, their characteristic features, methods of analysis, and relation to the chaotic properties of the system.

