UNIVERSITY OF SYDNEY

SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar

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Carslaw 173

A new test for chaos in noisy deterministic systems

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Abstract

In this talk we will present a new test for chaos. Traditional tests for chaos involve phase space reconstruction and calculate Lyapunov exponents or similar measures on the reconstructed phase space. Phase-space reconstruction is known to exhibit problems when the dimensionality of the underlying dynamics is high and these problems get amplified in the presence of noise. We present a new test which works directly with the time series and does not rely on phase-space reconstruction. We show numerical evidence that the test works well for data contaminated with additive noise.

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