



The University of Chicago
Departments of Computer Science,
Mathematics, and Statistics

Scientific and Statistical Computing Seminar

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A Menagerie of Stochastic Stabilization

TUESDAY, October 18, 2011, at 3:00 PM

207 Eckhart Hall, 5734 S. University Avenue (unless announced otherwise).

ABSTRACT

A basic problem for a stochastic system is to show that it possesses a unique steady state which dictates the long term statistics of the system. Sometimes the existence of such a measure is the difficult part. One needs control of the excursions away from the systems typical scale. As in deterministic system, one popular method is the construction of a Lyapunov Function. In the stochastic setting there lack of systematic methods to construct a Lyapunov Function when the interplay between the deterministic dynamics and stochastic dynamics are important for stabilization. I will give some modest steps in this direction which apply to a number of cases. In particular I will show a system where an explosive deterministic system is stabilized by the addition of noise and examples of physical systems where it is not clear how the deterministic system absorbs the stochastic excitation without blowing up.

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