



THE UNIVERSITY OF CHICAGO

Departments of Computer Science, Mathematics, Statistics, and the Computation Institute
SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

NAWAF BOU-RABEE

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Rutgers University

Structure-Preserving Algorithms for Self-Adjoint Diffusions

THURSDAY, February 27, 2014, at 4:30 PM

Eckhart 133, 5734 S. University Avenue

ABSTRACT

Self-adjoint diffusions arise in applications to polymeric fluids, Bayesian inference, and coarse-graining. I will review their properties; explain how to design (explicit) discretizations which preserve these properties, including the self-adjoint property; and discuss the implications of this preservation (or lack thereof). In addition, I will consider what happens to these discretizations in the small noise limit, where the stationary distribution of the diffusion becomes atomic. Applications will include computing first passage time statistics in a Brownian ratchet and computing radius of gyration statistics in the collapse dynamics of a bacteriophage DNA molecule in a solvent.

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