



Department of Mathematical Sciences

Seminar in Stochastic Systems

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Sampling Methods and Implicit Filtering

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3:30 pm

Kidde Building 228

Abstract: Many problems in optimal design are nonsmooth, nonconvex, and have internal iterations that may fail to converge. Traditional gradient-based optimization methods do poorly when confronted with these problems, often failing completely or finding an unacceptable local minimum. Sampling methods address these problems by only evaluating the function at each stage and then responding to the history of the optimization by targeting new points. In this talk I will illustrate these problems with some examples taken from applications, discuss the implicit filtering method in detail as an example of a sampling method, and present some numerical and theoretical results.

Professor Kelley is a world leading expert in numerical analysis. His research interests include nonlinear equations, multilevel methods for integral equations, radiative transfer problems, optimal control, optimization, and flow in porous media. He is the author of several books and many fundamental publications on numerical methods for optimization. C.T. Kelley is the Editor-in-Chief of SIAM Journal on Optimization and associate editor of five other journals. He is a member of the SIAM Council, and a former Vice Chair of the SIAM Activity Group on Optimization.