

STATISTICS COLLOQUIUM

MONDAY, NOVEMBER 07, 2011

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Fast and Accurate Statistical Computations for Communication and Regression”

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ABSTRACT

Two recent developments in provably fast and accurate statistical computations can be discussed. One concerns the problem of reliable communication at any rate below Shannon capacity for the Gaussian noise channel. Another concerns optimization of regression fits by linear combinations of nonlinearly parameterized basis functions (such as used in neural nets, hinging hyperplanes, or sinusoidal approximation). Adaptive annealing by stochastic diffusion with a suitably targeted sequence of distributions requires a drift function that solves a Kolmogorov-Chapman or Fokker-Plank PDE. An explicit solution is demonstrated for the problem of optimization of ridge spline basis functions by Markov chain methods.