

Discussion of

**Adaptive Markov Chain
Monte Carlo Algorithms**

by Jeff Rosenthal

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Adapt'Ski III

Virtual trip in time and space

space = statistical journals

Bayesian Analysis

- 2008** Computational Methods for Parameter Estimation in **Climate Models**. A. Villagran, G. Huerta, C.S. Jackson, M.K. Sen
- 2009** Bayesian Analysis for **Emerging Infectious Diseases**. C.P. Jewell, T. Kypraios, P. Neal, G.O. Roberts
- 2010** – Model Selection and Adaptive MCMC for Bayesian **Cointegrated VAR Models**. G.W. Peters, B. Kannan, B. Lasscock, C. Mellen
- Evolutionary Stochastic Search for Bayesian Model Exploration (**genomics**)
L. Bottolo and S. Richardson
- A General Purpose Sampling Algorithm for Continuous Distributions (the t-walk)
J.A. Christen and C. Fox

Bayesian Analysis

- **2007** Re-considering the variance parameterization in multiple precision models
Y.H. James, S. Hodgesy, and B.P. Carlin
- **2006** A comparison of Bayesian and likelihood-based methods for fitting multilevel models
W.J. Browne and D. Draper

OLD FASHION ADAPTATION

- **finite horizon adaptation**

Tierney + Mira, 1999, Some adaptive MC methods for Bayesian inference

- **independent adaptation**

Roberts + R 2007, Coupling and Ergodicity of Adaptive MCMC

Γ_n independent from X_n as in systematic and random scan hybrid algorithms

- **regeneration time**

Gilks + Roberts + Sahu, 1998, Adaptive Markov Chain Monte Carlo

ADAPTIVE REJECTION SAMPLING

- **2009**, Bayesian Generalized Method of Moments, G. Yin
- **2007**, Bayesian Hierarchical Multiresolution Hazard Model, V. Dukic
- **2006**, Explaining Species Distribution Patterns through Hierarchical Modeling, A.E. Gelfand, J.A. Silander, S. Wu, A. Latimer, P.O. Lewis, A. G. Rebelo, M. Holder
- **2006**, Bayesian Auxiliary Variable Models for Binary and Multinomial Regression, C.C. Holmes and L. Held

Google Scholar: 15 entries total for "adaptive MCMC" and "adaptive Metropolis"

Other journals

- **JRSS B**

2010, Particle MCMC methods, C. Andrieu, A. Doucet and R. Holenstein

2004, Markov chain Monte Carlo methods for high dimensional inversion in remote sensing, H. Haario, M. Laine, M. Lehtinen, E. Saksman, J. Tamminen

- **JASA**

2009, Learn From Thy Neighbor: Parallel-Chain and Regional Adaptive MCMC R.V. Craiu, J. Rosenthal, C. Yang

+ book reviews

- **JCGS**

2010, Divide and Conquer: A Mixture-Based Approach to Regional Adaptation for MCMC, Y. Bai, R. Craiu, A. Di Narzo

2009, Examples of Adaptive MCMC, G. Roberts, J. Rosenthal

2005, Identification of Regeneration Times in MCMC Simulation, With Application to Adaptive Schemes, A. Brockwell , J. Kadane

- **Computational Statistics**

2006, Semiparametric estimation of mean and variance functions for non-Gaussian data, D. Nott

2005, Componentwise adaptation for high dimensional MCMC, H. Haario, E. Saksman and J. Tamminen

- **Statistics and Computing**

2010, A computational framework for empirical Bayes inference, Y. Atchadé

2008, Special issue on adaptive Monte Carlo methods, P. Fearnhead

2008, Adaptive independence samplers, J. Keith, D. Kroese, G. Sofronov

2008, Adaptive evolutionary MC for optimization with applications to sensor placement problems, Y. Ren, Y. Ding, F. Liang

2008, A tutorial on adaptive MCMC, C. Andrieu and J. Thoms

2006, DRAM: Efficient adaptive MCMC, H. Haario, M. Laine, A. Mira, E. Saksman

- **Bernoulli**

2005 and **2009** by Y. Atchadé

QUESTIONS

- How to compare alternative adaptive and non-adaptive MCMC algorithms?
(I)ACT, Avr. sq. jump dist., Suboptimality factor, Number of target evaluations, Simulation time ... ?
- How to compare alternative adaptive MCMC, population MC and importance sampling?
- Latest news on CLT and SLLN for adaptive schemes?
all the statement you made in the presentations are in terms of "convergence in probability" plus Γ_n is not even guaranteed to converge

- any update on simultaneous adaptation of two parallel chains X'_n and X_n where Γ_n looks at X'_n only
- Are the two open questions of R+R 2007 still open?
Any new open problems for the decade?
Any prize?!?