BISP8

Eighth Workshop on
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Optimisation of pseudo-marginal random walk Metropolis algorithms

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The pseudo-marginal Metropolis-Hastings algorithm creates a Markov chain with a given stationary distribution, π when it is impossible to evaluate π itself, but when an unbiassed estimate, $\hat{\pi}$ is available. Typically $\hat{\pi}$ is obtained by importance sampling or through a particle filter and so is in fact the average of a number of unbiassed estimates.
We examine the efficiency of the pseudo-marginal random walk Metropolis algorithm in the limit as dimension $d \to \infty$ as a function of the distribution of the errors in each unbiassed estimate of the posterior, the number of unbiassed estimates, and the scale parameter of the random walk Metropolis proposal. Rules for joint optimisation over the number of estimates and the scale parameter are presented.

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Pseudo-marginal Metropolis-Hastings; Random walk Metropolis;
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