Notes for JONATHAN GOODMAN AND JONATHAN WEARE "ENSEMBLE SAMPLERS WITH AFFINE INVARIANCE "

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1. Introduction

An affine transformation is a transformation of the type y=Ax+B that makes it easier to sample from skewed probability densities. An affine invariant sampler views the two densities as equally difficult. The Nelder-Mead simplex optimization scheme is used in an MCMC context where we have many walkers that explore parameter space and one walker is updated using a proposal generated with the help of other walkers in the ensemble. One step in the ensemble Markov chain is then when all walkers in the ensemble have been updated (they are updated one at a time). Walkers are updated by a stretch move that uses the difference in the between the current walker and a randomly drawn one and a scaling constant Z from a density g which is symmetric.

Kalos and Whitlock make a persuasive case for making this the definition: Monte Carlo means using random numbers to estimate some number that itself is not random. Generating random samples for their own sakes is simulation.