

How to use IMCMC

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Abstract

Observational cosmology is my working area. Constraining cosmological models using various observational datasets is a hot topic, in which MCMC simulations are often involved. The problems encountered in cosmological are rather complicated, the *likelihood* functions are also complicated and live in very high dimensions, thus a robust MCMC sampler is extremely important to efficient problem solving, that's what IMCMC trying to be. This document explains the code structure of IMCMC and gives some examples on how to use it.

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1 Basics of MCMC

2 Robust algorithms

This section introduce my favorite MCMC algorithms/samplers, but currently only the Afine-invariant ensemble sampler [2.1] has been implemented in IMCMC.

2.1 Afine-invariant ensemble sampler

2.2 Nest sampler

2.3 Hamiltonian sampler

3 What should IMCMC be capable of?

3.1 Parsering parameters from *.ini files

Usually one will use many parameters in her/his codes, which might be model parameters, names/paths of data and even precision controlling parameters, thus a well-designed parser is very helpful.

3.2 Recording informations

4 Structure of IMCMC