Bayesian Inference and Information based model check of Langevin Systems

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Introduction

1. Stochastic Thermodynamics
   - Stochastic Processes
   - Brownian Motion
   - Stochastic Differential equation
   - Stochastic Integrals
   - Langevin Equation
   - Fokker-Planck Equation
   - Euler-Maruyuma Integrator
2. Bayesian Inference
   - Bayes Theorem
   - Prior Assignment
   - Example

Introduction(Contd.)

4. Information Theory
   - Shannon Information
   - Fisher Information
   - Kullback Liebler Divergence
5. Nested Sampling
   - Likelihood Function
   - MCMC
   - Evidence Calculation
6. Model Check
   - Information check
   - Scaling of Steps
   - p-value check

Definition

A stochastic process is a sequence of random variables where the indexing of the variables often carries the notion of time.

For example, we have Brownian motion, which is represented using the Wiener process (a stochastic process).