

Monte Carlo Simulation Workflow

Input Parameters

τ_c , B_{rms}
 γ_e , $d\bar{t}$, M

1. OU Noise Generation

Generate $\delta B(t)$
using AR(1) process

2. Phase Accumulation

$$\varphi(t) = \gamma_e \int B(t') dt'$$

3. Ensemble Averaging

$$E(t) = \langle \exp(i\varphi) \rangle$$

($M = 1000$ trajectories)

4. Coherence Calculation

$$|E(t)| = |\langle \exp(i\varphi) \rangle|$$

5. Fitting

Fit decay curve

$$E(t) = A \cdot \exp(-t/T_2) + B$$

6. T_2 Extraction

Extract T_2
with CI (bootstrap)

Output
 T_2 , CI