In the name of God

Department of Physics
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ADVANCED TOPICS IN STATISTICAL PHYSICS II

Exercise Set 2

(Date Due: 1394/12/20)

1. Compute the auto-correlation function and cross-correlation of data that you have from data set II as a function of τ. determine the statistical error of correlation function.

2. Calculate the relation between Cumulant and Moment using characteristic function. Don't ignore the mean value of underlying field.

3. Using the perturbative theory, calculate the average of arbitrary quantity up to σ_0^3.

4. Calculate $\langle \delta_D(\alpha - \nu) \rangle_{NG}$ for 1D stochastic field up to $\mathcal{O}(\sigma_0^3)$.

Good luck, Movahed