

In the name of God

Department of Physics  
Shahid Beheshti University

ADVANCED TOPICS IN STATISTICAL PHYSICS II

Exercise Set 3

(Date Due: 1395/01/15)

1. Calculate JPDF,  $p(x(t); x(t + \tau))$ , for  $\tau = 0$ ,  $\tau = 1$  and  $\tau = 10$ . Plot  $\Delta(\tau_n) = \sum_{x_1, x_2} |p(x_1(t); x_2(t + \tau_n)) - p(x(t))p(x(t + \tau_n))|$  as a function of  $\tau_n$ . Do for three kinds of data given in date set II.
2. Compute Markov time scale for data given in date set II.
3. Base on simple algorithm for Two-Point correlation function, calculate two-point correlation of a 1D data set available in date set II for  $0$ ,  $+2\sigma$  and  $-2\sigma$  features.

Good luck, Movahed

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