

In the name of God

Department of Physics
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STOCHASTIC PROCESSES

Exercise Set 11

(Date Due: 1400/03/20)

1. Show that the forward and backward Kramers-Moyal expansion are equivalent.

2. According to:

$$p(x, t + \tau | x', t) p(x', t) = p(x + \Delta - \Delta, t + \tau | x - \Delta, t) p(x - \Delta, t)$$

where $x' = x - \Delta$, derive the forward Kramers-Moyal expansion. (hint: this is called the third approach of expansion derivation mentioned in the class.

3. Exercise 3.4 and 3.5 of book "Analysis and Data-Based Reconstruction of Complex Nonlinear Dynamical Systems Using the Methods of Stochastic Processes", written by M. Reza Rahimi Tabar.

Good luck, Movahed
