In the name of God

Department of Physics
Shahid Beheshti University

STOCHASTIC PROCESSES

Exercise Set 4

(Date Due: 1396/12/27)

1. According to the following form of PDF, as:

$$P(\mathcal{A}) = \exp\left[\sum_{n=3}^{\infty} \frac{(-1)^n}{n!} \left\{ \sum_{\mu_1,\mu_2\cdots\mu_n} \mathcal{K}^{(n)}_{\mu_1,\mu_2\cdots\mu_n} \frac{\partial^n}{\partial\mathcal{A}_{\mu_1}\partial\mathcal{A}_{\mu_2}\ldots\partial\mathcal{A}_{\mu_n}} \right\}\right] P_G(\mathcal{A})$$

prove that

$$\langle\mathcal{F}\rangle = \left\langle \exp\left[\sum_{n=3}^{\infty} \frac{1}{n!} \left\{ \sum_{\mu_1,\mu_2\cdots\mu_n} \mathcal{K}^{(n)}_{\mu_1,\mu_2\cdots\mu_n} \frac{\partial^n}{\partial\mathcal{A}_{\mu_1}\partial\mathcal{A}_{\mu_2}\ldots\partial\mathcal{A}_{\mu_n}} \right\}\right] \mathcal{F} \right\rangle_G$$

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

Good luck, Movahed