Ex 7010 exam 2015

$$p_n \propto e^{-\beta(\varepsilon-\mu)n}$$

$$\bar{n} = \begin{cases} \dfrac{1}{\beta(\varepsilon-\mu)} & n \in [0,\infty] \\ \dfrac{1}{e^{\beta(\varepsilon-\mu)}-1} & n = \text{integer} \end{cases}$$

$$\mathrm{Var}(n) = \begin{cases} \bar{n}^2 & n \in [0,\infty] \\ (1\pm\bar{n})\,\bar{n} & \text{bose/fermi} \end{cases}$$

$$C(\tau) = \mathrm{Var}(n)\cdot e^{-|\tau|/\tau_0}$$

$$\nu = 2\,\mathrm{Var}(n)\cdot\tau_0$$

$$\eta = \frac{\nu}{2T} = \frac{\tau_0}{T}\mathrm{Var}(n)$$

$$\langle n\rangle = \bar{n} - \frac{\dot{\varepsilon}\,\tau_0}{T}\mathrm{Var}(n)$$