8.2

$$\partial_t n = \frac{\partial}{\partial r}\left(\frac{\partial n}{\partial r} - \frac{d-1}{r} n\right)$$

$d=3$

одномерное распред.- распр. Больцмана для диффузии в эфф потенциале по r.

$$\partial_t n = \frac{\partial}{\partial r}\left(\frac{\partial n}{\partial r} - \frac{2}{r} n\right) \qquad n = r\cdot f$$

$$r\partial f_t = \frac{\partial}{\partial r}\left(f + \frac{r\partial f}{\partial r} - 2f\right)$$

$$r\partial f_t = -\frac{\partial f}{\partial r} + \frac{\partial f}{\partial r} + \frac{r\partial^2 f}{\partial r^2} \Rightarrow \partial_t f = \frac{\partial^2 f}{\partial r^2}$$

$$f = \frac{1}{\sqrt{4\pi D t}}\left[\exp\left[-\frac{(r-L)^2}{4Dt}\right] - \exp\left[-\frac{(r-2R+L)^2}{4Dt}\right]\right]$$

$$p = \frac{1}{n_0}\int_R^\infty r f\, dr = \qquad n_0 = \int_A^\infty r f(r,0)\, dr = \int_R^\infty r\,\delta(r-)\frac{dr}{\sqrt{2D}} =$$

$$= \frac{L}{\sqrt{2D}}$$

$$p = \frac{1}{L}\sqrt{2D}\cdot\left[\int_R^\infty (r-R)\cdot f\,dr + \int_R^\infty R f\, dr\right] = \frac{R}{L}$$

$$P_0 = 1 - p = 1 - \frac{R}{L}$$