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Statistical Thermodynamics and Stochastic Kinetics

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Equation (2.82), page 27.

$$(\langle \Delta X \rangle)^2 = \left\langle \left(\frac{(X_1 - \langle X_1 \rangle) + (X_2 - \langle X_2 \rangle) + \cdots + (X_N - \langle X_N \rangle)}{N} \right)^2 \right\rangle$$

Equation (2.88), page 28.

$$\alpha^2 = \frac{(\Delta X_1)^2 + (\Delta X_2)^2 + \cdots + (\Delta X_N)^2}{N}$$

Line 3, page 54. $E_0 = \frac{1}{2}\hbar\omega$

Equation (3.116), page 58.

$$i\hbar \frac{\partial}{\partial t}\Psi(x,t) = -\frac{\hbar^2}{2m}\frac{\partial^2}{\partial x^2}\Psi(x,t) + U(x,t)\Psi(x,t)$$

Equation (4.32), page 74.

$$\begin{aligned} \left.\frac{\partial S}{\partial V}\right|_{N,E} &= k_B \left.\frac{\partial ln(\Omega)}{\partial V}\right|_{N,E} \\ &= \frac{P}{T}, \end{aligned}$$

Equation (4.33), page 74.

$$\begin{aligned} \left.\frac{\partial S}{\partial N}\right|_{E,V} &= k_B \left.\frac{\partial ln(\Omega)}{\partial N}\right|_{E,V} \\ &= -\frac{\mu}{T}. \end{aligned}$$

Line 2, page 82 $p = \sqrt{p_1^2 + p_2^2 + p_3^2} = \sqrt{2mE}$

Equation (4.88), page 88

$$\int_{\mathcal{V}} \left[div\left(\rho \underline{\dot{X}}\right) + \frac{\partial \rho}{\partial t} \right] d\mathcal{V} = 0$$

Equation (4.89), page 88

$$div\left(\rho \underline{\dot{X}}\right) + \frac{\partial \rho}{\partial t} = 0$$

Equation (4.90), page 88

$$div\left(\rho \underline{\dot{X}}\right) = \sum_{i=1}^{3N} \left[\frac{\partial H}{\partial p_i} \frac{\partial}{\partial q_i} - \frac{\partial H}{\partial q_i} \frac{\partial}{\partial p_i} \right] \rho$$

Equation (7.5), page 125.

$$q(1,V,T) = \frac{1}{h^{3s}} \int d\underline{p_i} d\underline{q_i} \exp\left(-\beta h_i\right)$$

Equation (7.37), page 132.

$$h_{vibration} = \frac{1}{2\mu} p_r^2 + U(r)$$

Equation (7.38), page 132.

$$q_{vibration}(1,V,T) = \frac{1}{h} \int dp_r \exp\left(-\frac{\beta}{2\mu} p_r^2\right) \int dr \exp\left(-\beta U(r)\right)$$

Equation (7.43), page 133.

$$\begin{aligned} \int_0^{+\infty} dr \exp\left(-\beta U(r)\right) &= \int_{-\infty}^{+\infty} d\delta \exp\left(-\frac{\beta \mu \omega^2}{2} \delta^2\right) \\ &= \left(\frac{\pi}{2\beta\mu\omega^2}\right)^{1/2} \end{aligned}$$

Equation B.9 (p. 311) should read:

$$dH = TdS + VdP$$

Equation B.10 (p. 311) should read:

$$dA = -SdT - PdV$$

Equation B.11 (p. 311) should read:

$$dG = -SdT + VdP$$

Equation B.13 (p. 311) should read:

$$dH = TdS + VdP + \Sigma_{j=1}^{M} \mu_j dN_j$$

Equation B.14 (p. 311) should read:

$$dA = -SdT - PdV + \Sigma_{j=1}^{M} \mu_j dN_j$$

Equation B.15 (p. 311) should read:

$$dG = -SdT + VdP + \Sigma_{j=1}^{M} \mu_j dN_j$$