STATISTICAL MECHANICS

In this file I will correct important errors in equations or misleading statements about physics. I will not correct typos in the text, or syntax, or grammatical errors. However, if you have found such errors please let me know. I will collect them just in case that a second edition of the book is issued. Thanks.

► Chapter 2, page 17: There is an incorrect subscript in the first sentence of §5; it should read

the value $p_h N$ predicted by probability theory

► Chapter 3, Exercise 3.3: Parts (a) and (b) should refer to 'electron', not 'molecule'.

► Chapter 4, page 54: Equations 4.11 and 4.12 have one sign incorrect. They should be

$$A = -k_B T \ln(Q) = -k_B T N \ln(q) + k_B T N [\ln(N) - 1] \quad (4.11)$$

$$A/N = -k_B T \ln(q) + k_B T [\ln(N) - 1] \quad (4.12)$$

► Chapter 6, page 89: The sign in the last line of Equation 6.64 is incorrect; in fact

$$\mu_c = + k_B T \ln(N) \quad (6.64)$$

► Chapter 9, page 120: Equation 9.21 and the following lines are incorrect. The translational contribution to the Helmholtz free energy is

$$a_t = -N k_B T \ln\left(\frac{V e}{N \Lambda^3}\right) \quad (9.21)$$

This is the sum of the translational ($-k_B N \ln(V/\Lambda(T))$ and the collective ($-k_B T N \ln(e/N)$) contributions to the free energy.

► Chapter 9, Exercise 9.5(a) on page 127: One of the fractions in Equation 9.36 is inverted; it should, of course, be

$$q_v \approx \exp\left[\frac{D_0}{k_B T}\right] \frac{T}{T_v} \quad (9.36)$$

► Chapter 9, page 142: Equation 9.70 should be

$$\frac{\mu}{RT} = -\ln\left(\frac{V}{N\,\Lambda(T)^3}\right) - \frac{D_0}{RT} + \ln\left(1 - \exp\left[-\frac{T_v}{T}\right]\right) - \ln\left(\frac{T}{\sigma\,T_r}\right) - \ln\left(\left[2I_1+1\right]\left[2I_2+1\right]\right) \qquad (9.70)$$

► Chapter 10, page 172: Equation 10.17 is missing a 1; it should be

$$\frac{s_v}{R} = \ln\left(\frac{T}{\sigma\,T_r}\right) + 1 \qquad (10.17)$$

► Chapter 10, page 173: In the first sentence of §9, R = 8.314 J/mol K, as usual.

► Chapter 11, page 195, first paragraph: The value of *K* for $^{16}O^{16}O$ dissociation is only roughly, not exactly, twice as big as that for $^{17}O^{16}O$ dissociation.

► Appendix 1, page 279: The units for the Boltzmann constant k should be erg/K.