

Quantum Mechanics An Experimentalist's Approach

Corrections to First Printing

- Page 32, Rule 6: The sentence stating the rule should end with a colon:
... on a given measurement:

- Page 50, Problem 3.3, part (b), 3rd line from the bottom. Replace θ by Θ in both places:
...scattering angle $\Theta = 90^\circ$ (Figure 3.7). It can be shown that at $\Theta = \pi / 2$,

- Page 132, 11th line from the bottom should have a comma as follows:
quantum mechanics and classical mechanics, and in quantum statistical mechanics.

- Page 136, equation (6.84), second line should read:

$$= \int_{t_0}^t \left[\frac{\partial L}{\partial x} \delta x + \frac{\partial L}{\partial \dot{x}} \frac{\partial}{\partial \tau} (\delta x) \right] d\tau$$

- Page 136, equation (6.85): The superior limit of integration should be t , not t' :

$$\delta S = \int_{t_0}^t \left[\frac{\partial L}{\partial x} \delta x + \frac{\partial}{\partial \tau} \left(\frac{\partial L}{\partial \dot{x}} \delta x \right) - \left(\frac{\partial}{\partial \tau} \frac{\partial L}{\partial \dot{x}} \right) \delta x \right] d\tau$$

- Page 225, equation (10.17) should read:

$$\delta = \frac{Z^4 \alpha^2}{4} \left[\frac{\left(\frac{3}{2} \frac{5}{2} - 1 \times 2 - \frac{1}{2} \frac{3}{2} \right) - \left(\frac{1}{2} \frac{3}{2} - 1 \times 2 - \frac{1}{2} \frac{3}{2} \right)}{8 \times 1 \times \frac{3}{2} \times 2} \right] = \frac{Z^4 \alpha^2}{32}$$

- Page 250, third line after equation (11.14), the word particle is spelled incorrectly. The last phrase should read:

..., no two single-particle orbitals w

- Page 272, Problem 11.4(b), the last sentence should end with a period:

... and ^{19}F .

- Page 284 equation (12.34) should read:

$$J = \int_0^\infty \phi'^2 dx = -\frac{2}{7} \phi'(0) = \frac{2}{7} 1.58807 = 0.4537$$

- Page 284 equation (12.36). first line, right hand side, should read:

$$-4\pi \int_0^\infty \frac{Z}{r} nr^2 dr$$

- Page 405, 5th and 6th lines of text after equation (17.2): The sentence should read:

Let us consider the *relative* energy shift of the $2^2s_{1/2}$ and $2^2p_{1/2}$ states, which are degenerate in the...

- Page 442, second line of text after equation (18.72a). It should read:

right-hand side of (18.72a) explicitly.

- Page 446, line above equation (18.85b): the last phrase should read:

Then (18.85a) is rewritten as:

- Page 448, line just above equation (18.91): The first phrase should read:

$$kz' = \mathbf{k}_0 \cdot \mathbf{r}' \text{ and } k\mathbf{r}' \cdot \hat{\mathbf{r}} = \mathbf{k} \cdot \mathbf{r}'.$$

- Page 451, equation (18.101) should read:

$$f(\theta) = \frac{m_e}{2\pi\hbar^2 q^2} \int e^{iq \cdot \mathbf{r}} (\nabla^2 V) d^3 \mathbf{r}$$

- Page 457 (Problem 18.4) , 3rd line, first phrase should read:

$$v \ll c.$$

- Page 525 equations (22.72) should read:

$$\delta\Psi = \Psi' - \Psi = i\alpha\Psi \quad \delta\bar{\Psi} = \bar{\Psi}' - \bar{\Psi} = -i\alpha\bar{\Psi}$$

- Page 528 2nd line from bottom should read:

$$= I - i \int_{t_0}^t H_I(t_1) dt_1 + (-i)^2 \int_{t_0}^t H_I(t_1) dt_1 \int_{t_0}^{t_1} H_I(t_2) dt_2$$

- Page 536 equation (23.34) third line, the last factor in square brackets should read:

$$\left[e^{-i(p_2' - p_1) \cdot x} e^{-i(p_1' - p_2) \cdot x'} - e^{-i(p_1' - p_2) \cdot x} e^{-i(p_2' - p_1) \cdot x'} \right]$$

- Page 536 equation (23.36) first line right hand side should read:

$$\int d^3 \mathbf{x} e^{i(p_2 - p_2' + p_1 - p_1') \cdot \mathbf{x}} \int d^3 \mathbf{y} \frac{1}{y} e^{i(p_1' - p_1) \cdot \mathbf{y}}$$

- Page 537 equation (23.38) first line right hand side should read:

$$-i(2\pi)^4 \frac{\delta^4(p_1 + p_2 - p_1' - p_2')}{V^2} \sqrt{\frac{m^4}{E_1 E_2 E_1' E_2'}} e^2$$

- Page 545 equation (23.71) should read:

$$M = e^2 \left[\bar{v}(p_+ s_+) i \not{\epsilon}_1 \frac{i(\not{p} + m)}{p^2 - m^2} i \not{\epsilon}_2 u(p_- s_-) + \bar{v}(p_+ s_+) i \not{\epsilon}_2 \frac{i(\not{p}' + m)}{p'^2 - m^2} i \not{\epsilon}_1 u(p_- s_-) \right]$$

- Page 548, 6 lines from the bottom: The symbol • in the left margin should not be there.

- Page 564, Section 24.1, first line of text: delete:

$$\begin{pmatrix} \nu_e \\ e^- \end{pmatrix}, \begin{pmatrix} \nu_\mu \\ \mu^- \end{pmatrix}, \text{ and } \begin{pmatrix} \nu_\tau \\ \tau^- \end{pmatrix}$$

Hence the first line should read:

At the present stage of knowledge, four distinct physical interactions

- Page 598: the line above equation (24. 90) should end in a colon:

... remain:

- Page 627 Problem 24.4 11th line: the right hand side of the algebraic formula should read:

$$64 p_\mu \cdot p_2 p_e \cdot p_1$$

- Page 650, Appendix A, the line after equation (A.33) should end as follows:

... the slightly smaller number