Peeter Joot
peeter.joot@gmail.com

Believed to be typos in Desai's QM Text

These are collected notes of believed typos from my reading of [1]. Some were confirmed by Prof. Vatche Deyirmenjian who taught the PHY356 course I took at UofT. He also pointed out still more (and pointed out where I had identified the wrong source for some typos).

Some but not all of the typos found in the second third of the book have been confirmed by Prof. John Sipe, who teaches the PHY456 course, also at UofT.

Any of the typos found in the last third of the text (Dirac content) have not been confirmed, and are based only on private study.

1.1 Chapter 1

- Page 1. Prof. Deyirmenjian: The Hermitian, not complex conjugate, of $|\rangle$ is $\langle|$.
- Page 5-6. Prof. Deyirmenjian: Change the $*$ in (1.26), (1.31), and (1.33) to a dagger.
- Page 7. Text before (1.43). α instead of a used.
- Page 19. Equation (1.122). †s omitted after first equality.

1.2 Chapter 2

- Page 40. Text before (2.137). Reference to equation (2.133) should be (2.135)
- Page 53. Is the "Also show that" here correct? I get a different answer.

1.3 Chapter 3

- Page 61. Equation (3.51). $1/\hbar$ missing.
- Page 62. Equation (3.58). Prof. Deyirmenjian: Remove the U_I operators from Eq. (3.58)
- Page 66. Equation (3.92). $-(d/dt\,\langle\alpha|)\,|\alpha\rangle$ should be $+|\alpha\rangle\,d/dt\,\langle\alpha|$.
- Page 66. Equation (3.93). H on wrong side of $\langle\alpha|$

- Page 74,76. Prof. Deyirmenjian: remove the extra brackets from Eq (4.9) and (4.21).
- Page 79. Prof. Deyirmenjian: "The probability of finding this particle" should read "The probability density for this state at point x is"

1.4 Chapter 4

- Page 81. Equation (4.52). Should be -2α in the exponent.
- Page 82. Equation (4.65). Prof. Deyirmenjian: a $1/\sqrt{2\pi}$ is missing before the integral. Note that without this (4.67) appears incorrect (off by a factor of $\sqrt{2\pi}$, but the error is really just in (4.65).
- Page 82. Equation (4.67). Prof. Deyirmenjian: the negative sign should appear inside the large square brackets.
- Page 83. Equation (4.74). A normalized wave function is not required for the discussion, but if that was intended, a $1/\sqrt{2\pi}$ factor is missing.
- Page 83-84. Prof. Deyirmenjian: In (4.67) and (4.77), the derivative should be evaluated at $k = k_0$.
- Page 86. Equation (4.99). Extra brace in the exponent.
- Page 87. Equation (4.106). Extra brace in the exponent.
- Page 89. Equation (4.124-4.130). Prof. Deyirmenjian: $Ce^{\pm\sqrt{\mu}\phi}$ is not a solution to (4.122). This should be $Q(\phi) = Ce^{i\sqrt{\mu}\phi}$ and (4.126) should be $\sqrt{\mu} = m$. This fixes the apparent error in sign in equations 4.129 and 4.130 which are correct as is.
- Page 92. Equation (4.158). Prof. Deyirmenjian: should read $P_l(1) = 1$.
- Page 93. Equation (4.169). conjugation missing for Y_{lm}. $Y_{l'm'}$ is missing prime on the l index.
- Page 95. Second line of text. Language choice? "We now implement". perhaps utilize would be better?
- Page 95. Text before (4.193). i is in bold.
- Page 96. Text before (4.196). i is in bold.
- Page 97. (4.205). i is in bold.
- Page 97. (4.207-209). $\mathbf{i}$, and $\mathbf{j}$s are not in bold like $\mathbf{k}$
- Page 101. (4.245). The right side should read $Y_{l,m+1}$
- Page 101. (4.239-240). The approach here is unclear. FIXME: incorporate lecture notes from class that did this using braket notation.
- Page 102. (4.248-249). Commas missing to separate l, and $m \pm 1$ in the kets.

1.5 Chapter 5

- Page 109. (5.49). minor: Remove bold font in right hand side state $|\chi_{n+}\rangle$.
- Page 113. (5.86). One σ is not in bold.
- Page 114. (5.100). χ is in bold.
- Page 115. Text before (5.106). α in bold.
- Page 118. Switch of notation in problem 5 for ensemble averages. $[S_i]$ used instead of $\langle S_i \rangle_{\text{av}}$.

1.6 Chapter 6

- Page 120. ϕ in bold. A not in bold.
- Page 123. (6.26). $1/i\hbar$ factor missing on RHS.
- Page 124. Text before (6.37). You say canonical momenta P_k, but call these mechanical momenta on prev page.
- Page 125. (6.41). Some ψs are in bold.
- Page 126. (6.49). There is no mention that **B** is constant, leaving it unclear how the gauge condition and how the curl of **A** reproduces **B**. This would also help clarify how you are able to write $\boldsymbol{\mu} \cdot \mathbf{B} = \mathbf{B} \cdot \boldsymbol{\mu}$.
- Page 128. (6.65). $\boldsymbol{\mu} \cdot \mathbf{L}$ should be $\boldsymbol{\mu} \cdot \mathbf{B}$.
- Page 129. (6.75). $\boldsymbol{\mu} \cdot \mathbf{L}$ should be $\boldsymbol{\mu} \cdot \mathbf{B}$.
- Page 130. (6.80). integral looks like it should be $\int_{\mathbf{r}'=\mathbf{r}_0}^{\mathbf{r}} \frac{e}{c\hbar} \mathbf{A}(\mathbf{r}') \cdot d\mathbf{r}'$. ie: Clarify bounds, and add a factor of c in the denominator which is required for the cancellation of (6.82).
- Page 131. (6.81,6.86). Factors of cs should be with each of the $\hbar$s.
- Page 131. Problem 1. bold missing on **E**.

1.7 Chapter 8

- Page 143. (8.58). β should be negated.
- Page 159. (8.6.3). Two references to Chapter 2 should be Chapter 4.
- Page 160. (8.199). Want $\hbar^2$ not $\hbar$ in expression for k.
- Page 162. (Fig 8.9). Figure is backwards compared to text (a bump instead of a well).
- Page 165. (8.235). Extra R_l factor inside parens.

1.8 Chapter 9

- Page 174. (9.5). Have $\hbar/2m\omega$ instead of $\hbar m\omega/2$ in expression for P.
- Page 181. (9.57). Factor of two missing. Want $\frac{\alpha}{2\sqrt{\pi}}$.
- Page 186. (Problem 10). Sequencing the text and problems is off. The green's function technique is not introduced until chapter 10.

1.9 Chapter 10

- Page 189. (10.22). It would be nice to have a reference to the appendix (ie: 10.100) for the chapter so that this identity is not pulled out of a magic hat.
- Page 192. (10.44, 10.45). $2\alpha\alpha^{*\prime}$ should be $\alpha\alpha^{*\prime} + \alpha^{\prime}\alpha^{*}$
- Page 193. (10.51). Application (slowly, step by step explicitly) of 10.100 to expand the $e^{\frac{i}{\hbar}(p_0 X - x_0 P)}$ in the braket gives

$$\begin{aligned}
\langle x| e^{\frac{i}{\hbar}(p_0 X - x_0 P)} |0\rangle &= \langle x| e^{\frac{i}{\hbar}p_0 X} e^{-\frac{i}{\hbar}x_0 P} e^{-\frac{i}{2\hbar}x_0 p_0 [X,P]} |0\rangle \\
&= \langle x| e^{\frac{i}{\hbar}p_0 X} e^{-\frac{i}{\hbar}x_0 P} e^{\frac{x_0 p_0}{2}} |0\rangle \\
&= e^{\frac{x_0 p_0}{2}} \langle x| e^{\frac{i}{\hbar}p_0 X} e^{-\frac{i}{\hbar}x_0 P} |0\rangle \\
&= e^{\frac{x_0 p_0}{2}} \left(\langle 0| e^{\frac{i}{\hbar}x_0 P} e^{-\frac{i}{\hbar}p_0 X} |x\rangle \right)^* \\
&= e^{\frac{x_0 p_0}{2}} \left(\langle 0| e^{\frac{i}{\hbar}x_0 P} |x\rangle e^{-\frac{i}{\hbar}p_0 x} \right)^* \\
&= e^{\frac{x_0 p_0}{2}} e^{\frac{i}{\hbar}p_0 x} \left(\langle 0| e^{\frac{i}{\hbar}x_0 P} |x\rangle \right)^* \\
&= e^{\frac{x_0 p_0}{2}} e^{\frac{i}{\hbar}p_0 x} \left(\langle 0|x - x_0\rangle \right)^* \\
&= e^{\frac{x_0 p_0}{2}} e^{\frac{i}{\hbar}p_0 x} \langle x - x_0|0\rangle \\
&= e^{\frac{x_0 p_0}{2}} e^{\frac{i}{\hbar}p_0 x} \psi_0(x - x_0, 0)
\end{aligned} \tag{1.1}$$

  This is the same as (10.51) with the exception of a real scalar constant $e^{x_0 p_0/2}$ multiplying the wave function. Because of this I think that (10.51) should be a proportionality statement, and not an equality as in

$$\langle x| e^{\frac{i}{\hbar}(p_0 X - x_0 P)} |0\rangle \propto e^{\frac{i}{\hbar}p_0 x} \psi_0(x - x_0, 0) \tag{1.2}$$

  (ie: building this additional factor into the wave function normalization instead).
- Page 196. (text after 10.76). Looks like reference to Chapter 9, should be Chapter 9 problem 5.
- Page 197. (text after 10.85). Reference to Chapter 1 should be Chapter 2.

1.10 Chapter 16

- Page 278. minor: On the line "Pulling out", $\left|\psi_s^0\right\rangle$ should be $\left|\psi_s^{(0)}\right\rangle$.
- Page 286. (16.73). a should be a_0

1.11 Chapter 17

- Page 297. (17.38). appears to be off by a factor of 2 since $(\sin^2 2x)' = 2\sin x \cos x = \sin(2x)$.
- Page 311. (17.134). d/dt' missing on the H'_{ss} term in the integral.
- Page 311. (17.136). First term (non-integral part) should be negated.
- Page 312. (17.144). Sign on λ before sum positive instead of negative.
- Page 313. (17.149). $1/\hbar$ missing.
- Page 313. (17.152,17.154). extra bra around the bra.
- Page 313. (17.153). bra missing on ϕ_n

1.12 Chapter 19

- Page 345. fig (19.2). Infinite potential is positioned at a instead of 0 (no reference to a in §19.2).
- Page 346. (19.40). $1/|A|^2$ missing from both RHS terms.
- Page 347. (19.50). minor: misplaced comma.
- Page 349. (19.66). $1/2$ missing on RHS.
- Page 349. (19.67). $1/2$ missing on RHS.

1.13 Chapter 24

- Page 450. (24.6). $k^2(x)$ should be $k^2(x)u$.
- Page 452. (24.18). In the $E < V$ case should be $1/\sqrt{\kappa}$ instead of $1/\sqrt{k}$ (although what is in the text is strictly still correct since it only changes the phase of the wavefunction).
- Page 455. (24.40). RHD should be multiplied by $\hbar$.
- Page 460. (24.71). ψ should be ϕ.
- Page 460. Third paragraph. $(\mathbf{r}_1 - \mathbf{r})$ should be $(\mathbf{r}_1 - \mathbf{r}_2)$.

- Page 460. (24.76). The integral should be $1/3$, not $5\pi/32$. This messes up some of the subsequent stuff, unless there is also another compensating error. Note that one can check this easily since the derivative of $-1/(3(1+x)^3)$ is $(1+x)^{-4}$.

1.14 Chapter 25

- Page 471. (25.18). i subscripts missing on $\mathcal{L}$ and $\dot{y}^2$.
- Page 474. (25.39, 25.43). $\hbar = 1$ units for the delta function and position-momentum matrix element are used, but the $\hbar$ is added back in later in equation (24.47). This should be $\delta(x_2 - x_1) = (1/2\pi\hbar)\int dp_1 e^{ip_1(x_2-x_1)/\hbar}$, and $\langle x|p\rangle = e^{ipx/\hbar}/\sqrt{2\pi\hbar}$ with small corrections to most of the equations that follow.
- Page 475. (25.51). ϵ should be $-i\epsilon/\hbar$.
- Page 475. (25.51, 25.53). The $m\hbar$ terms in $w(\epsilon)$ should be $m/\hbar$. This is more fallout from the previous $\hbar$ omissions.
- Page 477. (25.63). i is missing as a factor in the $e^{-iS/\hbar}$.

1.15 Chapter 26

- Page 486. (26.60). $\mathbf{n} \times \mathbf{r} \cdot \boldsymbol{\nabla}$ ought to have braces and read $(\mathbf{n} \times \mathbf{r}) \cdot \boldsymbol{\nabla}$.
- Page 487. (26.67). 0 in the $3,3$ position should be 1.
- Page 489. before (26.84). For rotations about the imaginary axis was probably meant to be the i'th axis.
- Page 495. (26.149,26.150). Looks like $\hbar$'s are missing (esp. compared to 26.144-145).
- Page 495. (26.150). J_y off by -1. ($J_x + iJ_y \neq J_+$) as is.
- Page 496. (26.154). An extra $Y_{l'm}$ in the integral, in between $Y_{l'm'}$ and the (θ, ϕ).
- Page 498. (26.175). $e^{i\phi}$ should be $e^{-i\phi}$ in the first line.
- Page 498. (26.178). An $\hbar$ factor has been lost in either (26.178) or (26.179).
- Page 499. (26.190). minor: $\mathbf{j}$ should be $\mathbf{J}$.
- Page 450. (26.192). minor: $\mathbf{j}$ should be $\mathbf{J}$, and R should be $\hbar$.

1.16 Chapter 27

- Page 503. (27.8). minor: bold χ. $R(\theta, \phi)$ probably meant to be $R(\chi)$.
- Page 504. (27.20). Missing $\hbar E_n$ factor on LHS.
- Page 507. before (27.53). minor: Velocity v missing bold.
- Page 510. before (27.78). minor: periods in the two kets should be commas.
- Page 510. (27.80). σ_y and σ_z should be interchanged (if α is the polar angle then $\hat{\mathbf{n}} = \hat{\mathbf{y}}$ for that rotation, and $\hat{\mathbf{n}} = \hat{\mathbf{z}}$ for the rotation in the x, y plane). The $\hbar$'s here should also be dropped.
- Page 511. (27.81). Same as 27.80.
- Page 511. (27.83). $\hbar$'s should be dropped.
- Page 514. (27.109). minor: dot instead of cdot.
- Page 515. (27.117). Same error as in (26.149-150). $\hbar$'s missing, and wrong sign on J_y.

1.17 Chapter 28

This chapter written as if $\hbar = 1$, without a statement that this is being done.

- Page 518. (28.4). $\hbar$ missing. Also in text following, eigenvalue should be $m\hbar = \hbar(m_1 + m_2)$.
- Page 519. (28.9). $\hbar$ missing LHS.
- Page 519. (28.11). $\hbar$ missing (after each equality). Text following m and $j(j+1)$ eigenvalues should be multipled by $\hbar$ and $\hbar^2$ respectively.
- Page 519. following (28.14). $\hbar$ missing in J_- equality.
- Page 520. (28.15). $\hbar$ missing for two factors after last =.
- Page 520. (28.16). $\hbar$ missing LHS.
- Page 520. (28.21). $\downarrow\downarrow$ should be $\uparrow\downarrow$.
- Page 521. following (28.25). Chapter 2 should read Chapter 5.
- Page 522. (28.31). Notational inconsistency. $|j_1 j_2 jm\rangle$ should read $|j_1 j_2, jm\rangle$
- Page 522. (28.31). Extra | between braket and ket.
- Page 523. (28.36). Notational inconsistency. $\langle m_1, m_2 | jm - 1\rangle$ should read $\langle m_1, m_2 | j, m - 1\rangle$
- Page 525. following (28.52). $l(l+1)$, $s(s+1)$, $j(j+1)$ eigenvalues all missing $\hbar^2$.
- Page 525. (28.53). LHS missing $\hbar^2$.

- Page 525. (28.54). LHS missing $\hbar^2$.
- Page 525. (28.57). RHS missing $\hbar$.
- Page 525. (28.58). RHS missing $\hbar$. $m \pm \frac{1}{2}$ should be $m \pm 1$.
- Page 526. (28.60). $\hbar^2$ missing from both terms.
- Page 526. (28.61). In first term $\sqrt{l + m_1 + 1}$ should be $\sqrt{(l + m_1 + 1)(l - m_1)}$.

1.18 Chapter 29

This chapter written as if $\hbar = 1$, without a statement that this is being done.

- Page 531. (29.23). $\hbar$ missing from second two lines.
- Page 533. (29.25). $\hbar$ should multiply all.
- Page 533. (29.26). $\hbar$ should multiply all (RHS).
- Page 533. (29.29). $\hbar$ should multiply all (RHS).
- Page 533. (29.30). $\hbar$ should multiply all (RHS).
- Page 533. (29.31). $\hbar$ should multiply all (RHS).
- Page 536. (29.59). $\hbar$ should multiply RHS.
- Page 536. (29.60). $\hbar$ should multiply RHS. $|jm + 1\rangle$ should be $|j, m + 1\rangle$.
- Page 536. (29.61). $\hbar$ should multiply RHS. $|j'm' - 1\rangle$ should be $|j', m' - 1\rangle$.
- Page 537. (29.65). $\langle j'm' - 1|m, q\rangle$ should be $\langle j', m' - 1|m, q\rangle$.

1.19 Chapter 31

- Page 562. (31.56). $T' = LT\tilde{M}$ is given for a mixed tensor representation. This is $T^{\mu}_{.\nu}$. The other mixed representation $T^{.\nu}_{\mu}$ transforms as $T' = MT\tilde{L}$.

1.20 Chapter 32

- Page 575. minor: $Et - \mathbf{p}.\mathbf{r}$ written instead of $Et - \mathbf{p} \cdot \mathbf{r}$
- Page 576. minor: $\boldsymbol{\nabla}.\mathbf{j}$ instead of $\boldsymbol{\nabla} \cdot \mathbf{j}$
- Page 577. (32.23). $\mathbf{j}$ accidentally includes the divergence.
- Page 579. (32.35). Sign missing in exponential. Should be $e^{-ik\cdot x}$ not $e^{ik\cdot x}$.

- Page 579. $\hbar\omega_k$ is the energy of the particle, not ω_k. There is also an $\hbar$ missing in the expression for ω_k. That is $\omega_k = \sqrt{c^2\mathbf{k}^2 + m_0^2c^4/\hbar^2}$.
- Page 580. (32.40). The factor of g presumed constant ought to be incorporated into χ if this is to be consistent with the (32.45) that follows.
- Page 583. (32.70). sign error. negate integral.
- Page 584. (32.74). sign error in the both the square root and subsequent approximation, which should be $p_4 = \pm\sqrt{\mathbf{p}^2 + m^2 - i\epsilon} \approx \pm(\omega_p - i\epsilon')$. (I have added approximately equal for the second part since that was not specified which I found confusing).
- Page 584. (32.75-76). there are multiple sign errors in these equations which should be

$$\begin{aligned}\frac{1}{p^2 - m^2 + i\epsilon} &\approx \frac{1}{(p_4 - \omega_p + i\epsilon')(p_4 + \omega_p - i\epsilon')} \\ &\approx \frac{1}{2\omega_p}\left(\frac{1}{p_4 - \omega_p + i\epsilon'} - \frac{1}{p_4 + \omega_p - i\epsilon'}\right)\end{aligned} \tag{1.3}$$

  Note that an attempt to confirm (32.76) yields

$$\frac{1}{p_4 - \omega_p + i\epsilon'} - \frac{1}{p_4 + \omega_p - i\epsilon'} = \frac{2\omega_p - 2i\epsilon'}{p^2 - m^2 + i\epsilon + \epsilon^2/4(\mathbf{p}^2 + m^2)} \tag{1.4}$$

  So we need approximations twice for the "equality".
- Page 584. (before 32.78). minor: bold script used for $\mathbf{p} \cdot \mathbf{r}$ on second like of the change of variables.
- Page 585. (32.82, 32.83). minor: $p_n.x$ instead of $p_n \cdot x$.
- Page 585. (32.82, 32.83). wrong normalization? would not we want $1/\sqrt{2\omega_{p_n}}$.
- Page 585. (32.84). notation switch? $0n$ index whereas $n0$ used above? What are the definitions of ψ_{0n}? that allow the integral to be converted to a sum?
- Page 586. (32.88). minor: $i\mathbf{k}.$ instead of $i\mathbf{k}\cdot$
- Page 586. (32.88). I calculate a negated $G(\mathbf{k})$ from (32.88). Guessing that (32.88), and (32.93 on pg 587) where intended to be negated like done earlier (for example in (32.57)).
- Page 587. (32.93). minor: $i\mathbf{k}.$ instead of $i\mathbf{k}\cdot$
- Page 588-589. (32.104-105). This substitution does not appear to work?

$$
\begin{aligned}
&(\boldsymbol{\nabla}^2 - \mu^2)(\phi' e^{-\mu r}) \\
&= \frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2 \frac{\partial}{\partial r}\left(\phi' e^{-\mu r}\right)\right) - \mu^2 \phi' e^{-\mu r} \\
&= \frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2 \left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \phi' e^{-\mu r}\right)\right) - \mu^2 \phi' e^{-\mu r} \\
&= \frac{\partial}{\partial r}\left(\left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \phi' e^{-\mu r}\right)\right) + 2\frac{1}{r}\left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \phi' e^{-\mu r}\right) - \mu^2 \phi' e^{-\mu r} \\
&= \frac{\partial^2 \phi'}{\partial r^2} e^{-\mu r} - \mu \frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \left(\left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \cancel{\mu \phi' e^{-\mu r}}\right)\right) + 2\frac{1}{r}\left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \phi' e^{-\mu r}\right) - \cancel{\mu^2 \phi' e^{-\mu r}} \\
&= \frac{\partial^2 \phi'}{\partial r^2} e^{-\mu r} - \mu \frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \frac{\partial \phi'}{\partial r} e^{-\mu r} + 2\frac{1}{r}\left(\frac{\partial \phi'}{\partial r} e^{-\mu r} - \mu \phi' e^{-\mu r}\right) \\
&= \left(\frac{\partial^2 \phi'}{\partial r^2} + 2\frac{1}{r}\frac{\partial \phi'}{\partial r}\right) e^{-\mu r} - 2\mu \frac{\partial \phi'}{\partial r} e^{-\mu r} - 2\mu \frac{1}{r}\phi' e^{-\mu r} \\
&= (\boldsymbol{\nabla}^2 \phi') e^{-\mu r} - 2\mu \left(\frac{\partial \phi'}{\partial r} + \frac{1}{r}\phi'\right) e^{-\mu r} \\
&= (\boldsymbol{\nabla}^2 \phi') e^{-\mu r} - 2\frac{\mu}{r}\left(\frac{\partial (r\phi')}{\partial r}\right) e^{-\mu r}
\end{aligned}
\tag{1.5}
$$

There is an extra term here that does not show up in (32.105) with this transformation. Can that be argued away somehow?

- Page 589. (32.107). minor: $i\mathbf{k}_f$. instead of $i\mathbf{k}_f \cdot$
- Page 589. (32.108). minor: $i\mathbf{q}$. instead of $i\mathbf{q}\cdot$
- Page 590. (after 32.118). minor: $i\mathbf{q}$. instead of $i\mathbf{q}\cdot$
- Page 591. (32.124). minor: $i\mathbf{q}$. instead of $i\mathbf{q}\cdot$

NOTE: up to commit efc6cd3bfee91f43949016f8ba851de273e4fa8d of these notes emailed to Desai May 10, 2011.

1.21 Chapter 33

- Page 597. (before 33.5). Last paragraph references chapter 12. Chapter 32 meant here? (or chapter 4).

1.22 Chapter 35

- Page 635. (35.46). minor: Bold on gamma.

- Page 636. (35.50). minor: Bold on gamma.
- Page 636-638. (35.51-35.58). minor: incomplete notation switch. This chapter uses E_p instead of $|E|$, but many formulas on these pages continue to use the $|E|$ notation from chapter 33, even mixing the two in some places.
- Page 643. (35.107). e^{ν}_{μ} should be $e^{.\nu}_{\mu}$. There are also some missing positional indicators in (35.105) and (35.106).
- Page 643. (35.114). $\overline{\psi}'(x')\psi(x')$ should be $\overline{\psi}'(x')\psi'(x')$.
- Page 645. (35.134). Wrong sign on γ_5. It should be $-i\gamma^1\gamma^2\gamma^3\gamma^4$.

1.23 Chapter 36

- Page 647. (36.7). Sign errors on both terms in the second line.
- Page 648. (36.12). $+ie\boldsymbol{\sigma}'$ should be negative.
- Page 648. (36.16-17). $\hbar$s should be omitted for consistency.
- Page 648. (36.16-17). It appears that the $-e\boldsymbol{\sigma}'$ should be $+e\boldsymbol{\sigma}'$.
- Page 649. (36.22). $+ie\boldsymbol{\alpha}\cdot\mathbf{E}$ should be negative (although this whole term drops out later after the non-relativistic expectation is taken).
- Page 649. (36.25). Same sign error on the $\boldsymbol{\alpha}\cdot\mathbf{E}$ term.
- Page 650. Equation reference to (36.32) should be (32.31)
- Page 650. (36.35). $1/2m$ in the denominator should be omitted.
- Page 653. (36.60,61). $\boldsymbol{\sigma}$ should be $\boldsymbol{\sigma}'$
- Page 653. (36.63). Should read $p_\mu \rightarrow p_\mu - eA_\mu$.
- Page 653. (36.64). Should read $D_\mu = \partial_\mu + ieA_\mu$.
- Page 654. (36.78). Missing factor of two. $-e\sigma^{\mu\nu}F_{\mu\nu}$ should be $-\frac{e}{2}\sigma^{\mu\nu}F_{\mu\nu}$.
- Page 655. (36.80). $\partial - eA$ should read $\partial + ieA$.

Bibliography

[1] BR Desai. *Quantum mechanics with basic field theory*. Cambridge University Press, 2009. 1