Errata for
The Feynman Lectures on Physics Volume III
New Millennium Edition (submitted 3/15/2019)

The errors in this list appear in *The Feynman Lectures on Physics: New Millennium Edition* and earlier editions; errors validated by Caltech will be corrected in future printings of the *New Millennium Edition* or in future editions.

Errors are listed in the order of their appearance in the book. Each listing consists of the errant text followed by a brief description of the error, followed by corrected text.

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III:1-2, par 1

In front of the wall we have an object which we shall call a "detector" of bullets.

Wrong object ('wall' vs. 'backstop').

In front of the backstop we have an object which we shall call a "detector" of bullets.

III:3-8, par 4

We will let *a* be the amplitude to scatter with no flip or spin.

Feynman originally said "…flip *of* spin." For consistency with the surrounding text and improved clarity this is changed to "spin flip."

We will let *a* be the amplitude to scatter with no spin flip.

III:4 [global change]

$kT \rightarrow \kappa T$ (9) occurences. In Vol. III κ is used for Boltzmann's constant to distinguish it from wave number k.

III:9 [global change]

Correction of old typo: $\Phi \rightarrow \phi$.

III:9-14, par 2

…which is five parts in 10^8.

Inaccurate statement.

…which is four parts in 10^8.

III:11-8, par 4

(You can always do that by changing both amplitudes by the same factor—$e^{iE_0T/\hbar}$—and get rid of any constant energy.)

Wrong symbol for time ('T' vs. 't').

(You can always do that by changing both amplitudes by the same factor—$e^{iE_0t/\hbar}$—and get rid of any constant energy.)

III:12-1, par 3

The electron can have its spin either “up” or “down” and, the proton can also have its spin either “up” or “down.”

Misplaced comma.

The electron can have its spin either “up” or “down,” and the proton can also have its spin either “up” or “down.”

III:12-5, par 3

Such an estimate gives a number in the right ball park.

Incorrect spelling of “ballpark.”

Such an estimate gives a number in the right ballpark.

III:13-5, par 3

Suppose that k were an imaginary number, say ik'. Then the amplitudes a_n would go as $e^{k'x_n}$, which means that the amplitude would get larger and larger as we go toward large x’s—or toward large negative x’s if k' is a negative number.

Sign error. See Eq. (13.10).

Suppose that k were an imaginary number, say ik'. Then the amplitudes a_n would go as $e^{-k'x_n}$, which means that the amplitude would get larger and larger as we go toward large negative x’s—or toward large positive x’s if k' is a negative number.

III:13-5, par 3

This kind of solution would be O.K. if we were dealing with line of atoms that ended, …

Missing article ‘a’.

This kind of solution would be O.K. if we were dealing with a line of atoms that ended, …

III:13-9, par 5

This is the same as saying that there is an amplitude A for the "missing electron" to jump from the nth atom to the (n − 1)st atom.

Inconsistent usage: amplitude should be "the same" as that in previous sentence.

This is the same as saying that there is an amplitude $iA/\hbar$ for the "missing electron" to jump from the nth atom to the (n − 1)st atom.

III:14 [global change]

In this chapter the term "p-n junction" occurs 5 times; that is what Feynman actually said and wrote on his blackboard. The term "n-p junction," which occurs 3 times, was introduced in the original editing and has been changed to "p-n junction" for consistency.

III:14-12, par 2

… these slight variations in potential will not effect appreciably the steep potential hill between the base and the collector.

Wrong word ('effect' vs. 'affect').

… these slight variations in potential will not affect appreciably the steep potential hill between the base and the collector.

III:15-12, Fig 15-15

The lowest energy level (1) should be $E_0 - 2A$, not $E_0 - A$.

III:15-5, par 3

… they would have energies, from Eq. (15.12), of

$$\varepsilon_1 = (2A - 2A\cos k_1 b)$$

and

$$\varepsilon_2 = (2A - 2A\cos k_2 b).$$

Inconsistent notation: ‘ε’ vs. ‘*E*’, per Eq. (15.12).

… they would have energies, from Eq. (15.12), of

$$E_1 = (2A - 2A\cos k_1 b)$$

and

$$E_2 = (2A - 2A\cos k_2 b).$$

III:15-5, Eq 15.20

$$E = \varepsilon(k_1) + \varepsilon(k_2) \tag{15.20}$$

Inconsistent notation ‘ε’ vs. ‘*E*’, per Eq. (15.12). See errata for III:15-5, par 3, above.

$$E = E_1 + E_2 \tag{15.20}$$

III:16-11, par 1

… we get the following set of equations for the amplitudes for particle in three dimensions:

Missing article ‘a’.

… we get the following set of equations for the amplitudes for a particle in three dimensions:

III:19-9, table 19-1, $\{l = 2,\ m = \pm 1\}$ angular dependence on amplitudes

The signs of the ‘angular dependence on amplitudes’ for $\{l = 2,\ m = \pm 1\}$ are reversed: for $m = +1$ it should be $-\sqrt{6}/2\sin\theta\cos\theta\, e^{i\phi}$, while for $m = -1$ it should be $\sqrt{6}/2\sin\theta\cos\theta\, e^{-i\phi}$.

III:19-9, table 19-1, $\{l = 3,4,5\}$ angular dependence on amplitudes

$$\left.\begin{matrix} 3 \\ 4 \\ 5 \end{matrix}\right\} \quad \left\{\begin{matrix} \langle l,0|R_y(\theta)R_z(\phi)|l,m\rangle \\ = Y_{l,m}(\theta,\phi) \\ = P_l^m(\cos\theta)e^{im\phi} \end{matrix}\right\} \quad \begin{matrix} f \\ g \\ h \end{matrix}$$

Inaccurate equations. The right-hand sides of the equations are missing constants of proportion. The first should be multiplied by *a* (see Eqs. 19.34 and 19.35), and the second should be multiplied by $\sqrt{(l-m)!/(l+m)!}$. Feynman comments on the tape that the value of 'a' is not important, and as he did not include the missing constants on his blackboard, we follow him, but change the equalities to proportions for improved accuracy.

$$\left.\begin{matrix} 3 \\ 4 \\ 5 \end{matrix}\right\} \quad \left\{\begin{matrix} \langle l,0|R_y(\theta)R_z(\phi)|l,m\rangle \\ \propto Y_{l,m}(\theta,\phi) \\ \propto P_l^m(\cos\theta)e^{im\phi} \end{matrix}\right\} \quad \begin{matrix} f \\ g \\ h \end{matrix}$$

III:20-3, par 3

To get the i,j element of $A^\dagger$ you go to the j,i element of $\hat{A}$…

Operator should be matrix (A vs. $\hat{A}$).

To get the i,j element of $A^\dagger$ you go to the j,i element of A …

III:21-3, par 2

The second bracket operating on $C(x)$ gives $C'(x)$ plus $if(x)C(x)$.

Sign error ('minus' vs. 'plus').

The second bracket operating on $C(x)$ gives $C'(x)$ minus $if(x)C(x)$.

III:21-6, par 4

… by observing directly with our hands on a macroscopic level the nature of wave function.

Missing article 'the.'

… by observing directly with our hands on a macroscopic level the nature of the wave function.

III:21-7 par 6

The probability that a pair is broken is proportional to $\exp\left(-E_{\text{pair}}/kT\right)$.

In Vol. III κ is used for Boltzmann's constant to distinguish it from wave number k.

The probability that a pair is broken is proportional to $\exp\left(-E_{\text{pair}}/\kappa T\right)$.

III:21-10, par 2

How big is the distance λ?

λ is not a distance, but an inverse distance (which is how Feynman refers to it), and it is $1/\lambda$ that is subsequently calculated.

How big is the distance $1/\lambda$?

III:21-16, par 1

Let

$$V = V_0 + v\cos\omega t,$$

where $v \ll V$.

Missing subscript. ('V_0' vs. 'V')

Let

$$V = V_0 + v\cos\omega t,$$

where $v \ll V_0$.