Errata for "Quantum Computing: From Concepts to Code"

Andrew Glassner
pianohands@proton.me

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My book "Quantum Computing: From Concepts to Code," published by No Starch Press, is available at your favorite physical or online bookstore, or directly from the publisher at `https://nostarch.com/quantum-computing`.

It's inevitable that a project of this size will have errors. This file describes each error that I'm aware of, followed by its correction. Each entry also acknowledges the person who first spotted the problem and when they reported it to me.

Not every change here corrects an error. Some changes are to clarify the presentation or otherwise improve your experience reading the book.

Most changes are described by their page number, paragraph number (written ¶, counted as blocks of text starting with 1), the material to be replaced, a right arrow →, and the new material. There's usually a bit of extra material in those excerpts to give you context. If a change is near the bottom of a page, I number that paragraph with negative indexing (like Python does). Thus ¶−1 refers to the final paragraph on the page, ¶−2 refers to the paragraph before it, and so on.

To support math where needed, I'm maintaining this file in LaTeX and making it available here as a PDF.

If you find an error that isn't already here, please send me an email describing the problem as clearly as you can. If I agree that it needs fixing, I'll list it here, and (if you like) I'll thank you with a quantum computing merit badge sticker for your laptop, refrigerator, or anywhere else you like to put stickers!

The Errata

Page 31, ¶3 Mark McLaughlin, 14 September, 2025
zahlen → *Zahlen*

Page 32, Gauss quote Willow Mahoney, 2 July 2025
$+1, 1,$ *and* $\sqrt{-1} \rightarrow +1, -1,$ *and* $\sqrt{-1}$

Page 47, ¶−1 Mark McLaughlin, 14 September, 2025
The same reasoning confirms → Using the same reasoning that gave us $-\beta$ as the second root, we find

Page 70, ¶−2 Mark McLaughlin, 2 December, 2025
Equation 2.55 → Equation 2.54

Page 137 ¶−1 Mark McLaughlin, 7 November 2025
$(XH)(HI) \rightarrow (X \otimes H)(H \otimes I)$

Page 150, ¶2 Andrew, 1 Sept 2025
(and their four-by-four qugate matrices) → (and their four-by-one qugate matrices)

Page 180 ¶−4 , Mark McLaughlin, 7 November 2025
influencing one another. → influencing one another (assuming there's no entanglement).

Page 188 ¶5 , Mark McLaughlin, 7 November 2025
the principle of partial → or the *principle of partial*

Page 199 ¶6 , Mark McLaughlin, 7 November 2025
that differ only by relative phase → that differ only by global phase

Page 221, ¶4 , Mark McLaughlin, 7 November 2025
prefer drawing this as in the overall recap of → prefer drawing this as in

Page 244, ¶1 Andrew, 3 July, 2025
becomes a relative phase → becomes a negative amplitude.

Page 244, ¶1 Andrew, 3 July, 2025
changes the relative phases between different terms. → causes interference among the superposition's terms.

Page 249, ¶5 , Mark McLaughlin, 7 November 2025
"propagation of relative phase to a superposition," → "propagation of a negative amplitude, which appears as a relative phase to one term in a superposition"

Page 250, ¶−4 Andrew, 3 July, 2025
delete "of propagation of relative phase,"

Page 252, ¶4 , Mark McLaughlin, 7 November 2025
Replace f_0 and f_3 with f^0 and f^3

Page 252, Table 9-1 , Mark McLaughlin, 7 November 2025
Replace each of $f_0(x), f_1(x), f_2(x), f_3(x)$ with $f^0(x), f^1(x), f^2(x), f^3(x)$

Page 252, ¶−4 , Mark McLaughlin, 7 November 2025
Replace each of f_0, f_1, f_2, f_3 with f^0, f^1, f^2, f^3

Page 252, ¶−1 , Mark McLaughlin, 7 November 2025
$f_2 \to f^2$

Page 259, ¶3 , Mark McLaughlin, 7 November 2025
excluding the $|-\rangle$ at the end). → excluding the $|-\rangle$ at the end, because we don't use or measure this qubit).

Page 261, ¶−2 , Mark McLaughlin, 7 November 2025
Equation 2.37 → Equation 2.41

Page 264, ¶3 , Mark McLaughlin, 7 November 2025
all 0s or all 1s. → all 0s.

Page 270, Equation 10.1 , Mark McLaughlin, 7 November 2025
$|x'\rangle \to |x\rangle$

Page 277, ¶−1 , Mark McLaughlin, 7 November 2025
wasn't huge → might not have seemed dramatic.

Page 279, ¶−2 , Mark McLaughlin, 7 November 2025
$[47, §12] \to [47, §13]$

Page 285, ¶−3 , Mark McLaughlin, 7 November 2025
Figure 9-3 and 10-3 → Figures 9-3 and 10-2

Page 287, Equation 11.7 , Mark McLaughlin, 7 November 2025
Replace second line with:
$= H^{\otimes n} |x_0\rangle$ because $|\psi_2\rangle_x = |x_0\rangle$ since y is y_0

Page 287, ¶−2 , Mark McLaughlin, 7 November 2025
values, following → values mod 2, following"

Page 311, ¶−1 , Mark McLaughlin, 7 November 2025
automatically expand multiply → automatically expand multiple

Page 328, ¶4 , Mark McLaughlin, 7 November 2025
as in Figure 13-7. → as in Figure 13-7. Here we see that all states have an amplitude of 0 except those at multiples of 8 (including 0), which have an amplitude $1/\sqrt{r}$.

Page 329, ¶−2 , Mark McLaughlin, 7 November 2025
Ifwe relax → If we relax

Page 338, ¶−3 , Mark McLaughlin, 7 November 2025
send her two bits to Bob. → actually transmit these bits to Bob.

References section

ePub URLs, Mark McLaughlin, 7 November 2025
Some URLs in the ePub version of the book were typeset with Unicode tildes (∼) which some browsers don't recognize, rather than the ASCII version (the URLs in the PDF seem to be fine). The solution for now is to click on the URL, let it fail, and then manually select each tilde in the URL in your browser's address bar and manually type a tilde from your keyboard to replace it. Then reload the page and things should work.
The affected references are:
[38], [60], [79], [85], [136], [172], [193], [194], [195], [196], [198], [224], [225].
There may also be a problem with the URL for reference [165] in the ePub version.

Reference [10], Mark McLaughlin, 7 November 2025
Add URL `https://www.realtimerendering.com/raytracing/An-Introduction-to-Ray-Tracing-The-Morgan-Kaufmann-Series-in-Computer-Graphics-.pdf`

Reference [13], Mark McLaughlin, 7 November 2025
Add URL `https://journals.aps.org/prx/pdf/10.1103/PhysRevX.13.041041`

Reference [39], Mark McLaughlin, 7 November 2025
Add URL `https://arxiv.org/abs/quant-ph/9708016`

Reference [44], Mark McLaughlin, 7 November 2025
This annual reference updates its name, contents, and URL each year. The 2025 version is titled *Top 63 Quantum Computer Simulators For 2025* with URL `https://thequantuminsider.com/2022/06/14/top-63-quantum-computer-simulators/`

Reference [98], Mark McLaughlin, 7 November 2025
Replace URL with: `https://github.com/Qiskit/textbook/blob/main/notebooks/ch-states/single-qubit-gates.ipynb`

Reference [102], Mark McLaughlin, 7 November 2025
Add URL `https://arxiv.org/pdf/1211.6518`

Reference [103], Mark McLaughlin, 7 November 2025
Add URL `https://arxiv.org/pdf/1110.0573`

Reference [116], Mark McLaughlin, 7 November 2025
Replace URL with `https://math.libretexts.org/Bookshelves/Linear_Algebra/A_First_Course_in_Linear_Algebra_(Kuttler)/02%3A_Matrices/2.02%3A_Multiplication_of_Matrices`

Reference [133], Mark McLaughlin, 7 November 2025
Replace URL with `https://phys.org/news/2020-05-animals-earth-magnetic-field.html`

Reference [165], Mark McLaughlin, 7 November 2025
The math formatting on this webpage appears to be broken.

Reference [196], Mark McLaughlin, 7 November 2025
In the title, 18.360 → 18.370

Reference [200], Mark McLaughlin, 7 November 2025
Add URL `https://www.researchgate.net/publication/2822536_On_the_Power_of_Quantum_Computation`

Reference [219], Mark McLaughlin, 7 November 2025
Replace URL with `https://ntrs.nasa.gov/citations/19880069935`

Reference [221], Mark McLaughlin, 7 November 2025
Remove URL - it seems to have gone away

Reference [295], Mark McLaughlin, 7 November 2025
Add URL `https://arxiv.org/pdf/2407.18224`

Reference [296], Mark McLaughlin, 7 November 2025
Add URL `https://arxiv.org/pdf/2107.13095`

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