

Errata: Typographical Errors, Mistakes, and Comments
Modern Quantum Mechanics, 3rd Edition
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First Printing

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Page 201. There is a typo in the first line of (3.304), which should read

$$E = \left(n_x + \frac{1}{2} + n_y + \frac{1}{2} + n_z + \frac{1}{2} \right)$$

instead of n_x repeated twice. Somehow this was never caught in the Second Edition.

Page 327. Purcell's name is misspelled in the footnote. I can't imagine how it happened that this crept into the third edition. It was spelled correctly in the second edition.

Page 354. *Equations (5.353) and (5.358).* The second line of (5.353) should read

$$= \sqrt{\frac{4\pi}{3}} (-\varepsilon_- r Y_1^{+1} + \varepsilon_+ r Y_1^{-1} + \varepsilon_0 r Y_1^0)$$

and on the following line $\varepsilon_{\pm} \equiv (\varepsilon_x \pm i\varepsilon_y)/\sqrt{2}$. Equation (5.358) should read

$$\langle \alpha'; s | \hat{\mathbf{e}} \cdot \mathbf{x} | \alpha; p, m \rangle = -\frac{1}{\sqrt{3}} (-\varepsilon_- \delta_{m,-1} + \varepsilon_+ \delta_{m,1} - \varepsilon_0 \delta_{m,0}) \mathcal{R}_{\alpha'\alpha}$$

Pages 359 & 360. *Problems 5.6 and 5.13.* These problems (and their solutions in the solutions manual) do not recognize a fascinating feature of the two-dimensional infinite square well. In fact, there is an infinite degeneracy in the first excited state, due to different possible forms of the wave function. (I need to investigate further the implications of this observation.)

See Rain, *et al.*, Phys. Rev. A104(2021)062205. Special thanks to Richard Klemm for bringing this to my attention.

Page 391. *Equation 6.101* The lower limit of the inner sum should be $m = -l$, not $m = -1$.

Page 448. In (7.91) there is an incorrect “|” following H_{KS} in the first line. Also, I got a question on how to go from the first line to the second, so I wrote it out more completely, but it is a mess. If anyone wants to see it, though, please contact me.

Page 452. In (7.106) there is an incorrect extra “-” sign in the formula for $\varepsilon_c(n)$.

Page 524. The normalization of the Hermite polynomials has a typo. The formula should be

$$\int_{-\infty}^{\infty} H_{n'}(\xi)H_n(\xi) e^{-\xi^2} d\xi = \pi^{1/2}2^n n! \delta_{nn'}$$

Page 531. In the second line at the top of the page, I mis-typed one of the indices for the cross product. It should read $(\mathbf{a} \times \mathbf{b})_i = \sum_j \sum_k \varepsilon_{ijk} a_j b_k$.

Page 543. The (Nobel Prize-winning) author’s last name is “Tomonaga”, not “Tomanaga”.