

**Errata for “The Stability of Matter in Quantum Mechanics”,  
complete as of February 23, 2022.**

*Page 22.* In Eq. (2.1.60), the value  $1.29 \times 10^{-19}$  should be replaced by  $1.29 \times 10^{-21}$ .

*Page 27.* On lines 7-8 the optimal Sobolev constant in three dimensions is quoted as  $S_3 = \frac{3}{4}(4\pi^2)^{2/3}$ . This should be replaced by  $S_3 = \frac{3}{4}(2\pi^2)^{2/3}$ . This appears later in several places that, therefore, have to be modified – as follows below.

*Page 27.* In Eq. (2.2.7), it should say  $2T_\psi$  on the left hand side. Correspondingly, in the line following (2.2.8) it should read  $\|V\|_{d/2} \leq \frac{1}{2}S_d$ , as well as  $\|h\|_{d/2} \leq \frac{1}{4}S_d$  below (2.2.9).

*Page 40.* In the second line,  $\mathbb{C}^{qN}$  should be replaced by  $\mathbb{C}^{qN}$ .

*Page 48.* In Eq. (3.1.36), the last  $\varepsilon_k$  should be replaced by  $\varepsilon_j$ .

*Page 49.* In Eq. (3.1.39), the normalization factor  $N^{-1/2}$  should be replaced by  $N^{-1/2}[(N-1)!]^{-1}$ .

*Page 52.* The remark in parenthesis after Eq. (3.2.5) is only accurate for bosons. For fermions, the corresponding energy would be  $\sim -N^{1/3}M^2$ .

*Page 53.* In the line preceding Eq. (3.2.7), it should read  $\underline{R} \mapsto \underline{R}/\lambda$  instead of  $\underline{R} \mapsto \lambda \underline{R}$ .

*Page 56.* In the first displayed equation, it should say  $\kappa \approx 7 \times 10^{-39}$ .

*Page 56.* In Eq. (3.2.12), the coefficient of the last term  $(\alpha Z - \kappa m_n^{-2})$  should be replaced by  $(\alpha - \kappa m_n^{-2})$ .

*Page 59.* In the second line of the footnote, the last factor  $\mathcal{E}(\phi + \psi)$  should be replaced by  $\mathcal{E}(\phi - \psi)$ .

*Page 60.* In Proof of Corollary 3.1, the inequality  $|\nabla f(x)| \geq |\nabla|f(x)||^2$  should be replaced by  $|\nabla f(x)|^2 \geq |\nabla|f(x)||^2$ .

*Page 63.* Two lines below Eq. (4.1.2), it should read “it suffices” instead of “is suffices”.

*Page 68.* On line 1 the  $n$  should be replaced by  $d$ . Thus,  $L_{\gamma,d} > L_{\gamma,d}^{\text{cl}}$ .

*Page 68.* In the 16th line, ‘which is less then  $L_{\gamma,d}/L_{\gamma,d}^{\text{cl}}$ ’ should be replaced by ‘which is less than  $L_{\gamma,d}/L_{\gamma,d}^{\text{cl}}$ ’.

*Page 79.* In the last displayed equation,  $V_0$  should be replaced by  $V_-$ .

*Page 104.* In the 5th line from below, the reference '(5.4.4)' should be replaced by '(5.4.6)'.

*Page 120.* The second line of (6.16.10) should read  $1/r$  if  $r \geq 1$  instead of  $1/2$  if  $r \geq 1$ .

*Page 123.* In the 3rd line, the value of  $K \geq (9/5)(4\pi^2)^{1/3} = \underline{3.065}$  should be replaced by "6.129". Similar typo in the last line of the proof on page 125.

*Page 165.* In Eq. (9.2.2),  $|\cdot|$  stands for the norm of a vector in  $\mathbb{C}^3 \otimes \mathbb{C}^2$ , and not for the norm of a vector in  $\mathbb{C}^2$ , as incorrectly claimed in the subsequent line.

*Page 168.* Equation (9.4.3) should read

$$Z\alpha^2 \leq \frac{\pi}{4} \left( \frac{3}{4} \right)^{3/2}$$

*Page 169.* On line three, replace  $\frac{\pi}{2}$  by  $\frac{\pi}{4}$ . Consequently, 19 160 has to be replaced by 9 580.

*Page 170.* In the unnumbered displayed inequalities on lines five and eight, replace  $4\pi^2$  by  $2\pi^2$ . Consequently, in the last formula on the page, on line twelve,  $\frac{\pi}{2\alpha}$  has to be replaced by  $\frac{\pi}{4\alpha}$ .

*Page 173.* In the displayed equation following Eq. (9.5.6), it should read  $p + \sqrt{\alpha}A(x)$  instead of  $p - \sqrt{\alpha}A(x)$  on the left.

*Page 177.* In the two equations following Eq. (9.5.11), the term  $-2Z\alpha Mq$  should be replaced by  $-2ZMq$ .

*Page 189.* The inequality in line 2 of Lemma 10.2 should be  $\frac{3\pi}{4} \leq \alpha_c < \infty$ .

*Page 190.* In the third displayed equation, the constant on the right side should be

$$\frac{3}{16} \left( \frac{\pi}{2} \right)^{1/3}$$

The same applies to the fourth displayed equation. Finally, the last inequality in the proof of Lemma 10.2 should read  $\alpha \leq \frac{3\pi}{4}$ .

*Page 194, line -2.* Erase the subscript  $\psi$  on  $\gamma_\psi^{(1)}$ .

*Page 208.* In the fifth displayed equation, the second  $\lambda$  on the left should have a subscript 1, i.e., it should be replaced by  $\lambda_1$ .

*Page 212.* About two thirds down the page, the reference should read [150, Sect. X.7].

*Page 224.* In the 8th line, ‘smaller that’ should be replaced by ‘smaller than’.

*Page 225.* In Eq. (12.2.6) replace  $E_N$  by  $E_0(N)$ .

*Page 227.* In the 8th line, ‘there as a  $\psi$ ’ should be replaced by ‘there is a  $\psi$ ’.

*Page 237.* In Eq. (13.2.5), the summation in the second term should run over  $L + 1 \leq j \leq N$ , while in the last term it should run over  $L + 1 \leq i < j \leq N$ .

*Page 251.* In the second displayed equation,  $N_j$  should be replaced by  $M_j$  on the right side. The same applies to first term in the following line.

*Page 281.* In Ref. [44], the page range 1538–1545 should be replaced by 698–711.

*Page 283.* In Ref. [83], there should be a period after “Part II” instead of a comma.