Errata for “The Stability of Matter in Quantum Mechanics”,
complete as of August 7, 2017.

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 40. In the second line, \(\mathbb{C}^N\) should be replaced by \(\mathbb{C}^n\).

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 \(R \mapsto R/\lambda\) instead of \(R \mapsto \lambda R\).

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 \((\alpha Z - \kappa m^{-2}_n)\) should be replaced by \((\alpha - \kappa m^{-2}_n)\).

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 \( K \geq (9/5)(4\pi^2)^{1/3} = 3.065 \) 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, 19160 has to be replaced by 9580.

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 forth 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 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.

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