ERRATA TO "QUANTUM FIELD THEORY"

(second and later printings)

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"line $-n$" means "line n from the bottom."

Note: The world of quantum field theory texts has recently welcomed a very significant addition: *Quantum Field Theory: Lectures of Sidney Coleman* (B. G. Chen et al., eds.), World Scientific, 2019. Coleman was a brilliant physicist and a legendary lecturer, and this book is based on the videotapes of the course he gave in 1975–6 together with notes taken by various people of later incarnations of that course, which have served as informal texts for many physics students over many years. The book is great, and its point of view is pretty compatible with mine. The advantage of my book is brevity (300 pages instead of 1100), but if you find places where my explanations are too terse or too incomplete, you should consult Coleman.

Page 15, last display: The formula for X_f should be $\sum \left(\frac{\partial f}{\partial x_j} \frac{\partial}{\partial p_j} - \frac{\partial f}{\partial p_j} \frac{\partial}{\partial x_j} \right)$

Page 17, line 8: The equalities after "But" should be $X_f H = \{f, H\} = df/dt$.

Page 30, 5th display: in the first term on the right, $m|\mathbf{v}|^2 \quad \to \quad m\mathbf{v}$

Page 39, line 12: $\langle u|V|w\rangle \quad \to \quad \langle Vu|Vw\rangle$

Page 49, line -1: $m^{-1}\nabla \cdot \nabla \quad \to \quad m^{-1}\nabla \cdot \nabla f$

Page 56, line -7: The correction to page 15 above entails the correction $X_{l_1} \quad \to \quad -X_{l_1}$.

Page 58, line 15: $\frac{1}{2} i\sigma_j \quad \to \quad \frac{1}{2i}\sigma_j$

Page 59, (3.33): $\mathcal{H}_l$ should be the linear span of the set on the right.

Page 60, line 4: $\frac{1}{2} \quad \to \quad \frac{1}{2}v_\pm$

Page 69, line -5: $j^0 \quad \to \quad j^\mu$ and quantity $\to$ current

Page 72, 4th display: $\gamma^1\gamma^2\gamma^3 \quad \to \quad \frac{1}{i}\gamma^1\gamma^2\gamma^3$

Pages 85–6: Replace the text from the words "that are" at the bottom of p. 85 to "acts is" on lines 2–3 of p. 86 by the following: of the form $f(a, A) = e^{i\langle p,a\rangle} f_0(p)$ where $p = Ap_m^+ \in X_m^+$ and f_0 is square-integrable with respect to the invariant measure on X_m^+. Since f_0 carries all the information, the Hilbert space on which $\pi_{m,0}$ acts can be identified with

Page 86, line 8: $\mathbf{p} \cdot \mathbf{x} \quad \to \quad i\mathbf{p} \cdot \mathbf{x}$

Page 88, 5th display, first line: $S(A^{-1}) \quad \to \quad \Phi(A^{-1})$

Page 88, (4.44): $\mathbf{p}\cdot\mathbf{x} \quad\to\quad i\mathbf{p}\cdot\mathbf{x}$

Page 94, 2nd line after (4.55): $(-1)^j \quad\to\quad (-1)^{j-1}$

Page 98, line −5: $\frac{1}{2}\sum\omega_j x_j^2 \quad\to\quad \frac{1}{2}\sum\omega_j^2 x_j^2$

Page 101, line −4: $A_j^* \quad\to\quad A_j^\dagger$

Page 102, 2nd display: $A_{\mathbf{p}}^* \quad\to\quad A_{\mathbf{p}}^\dagger$

Page 106, line 9: $v(\mathbf{p})^* \quad\to\quad u(\mathbf{p})^*$

Page 108, line −10: $\sqrt{\omega_j/2}(A_j - A_j^\dagger) \quad\to\quad (1/i)\sqrt{\omega_j/2}(A_j - A_j^\dagger)$

Page 110, 2nd display: $\omega'_{\mathbf{p}} \quad\to\quad \omega_{\mathbf{p}'}$

Page 112, line −1: of the $\quad\to\quad$ the

Page 113, formulas (5.29): The vectors called $v(\mathbf{0},+)$ and $v(\mathbf{0},-)$ here should be $-v(\mathbf{0},-)$ and $v(\mathbf{0},+)$, respectively. (See Weinberg [131], (5.5.36).)

Page 113, 2nd line above (5.30): $U \quad\to\quad U'$

Page 114, 6th line before (5.34): (4.15) $\quad\to\quad$ (4.21)

Page 115, line −1: $\sigma \quad\to\quad s$

Page 117, 6th line after (5.41): Delete "(the same one for each ν)".

Page 120, lines −6 to −4: The statement in parentheses is incorrect; the assertion that "$\phi(x)$ creates a particle at x" has to be interpreted more loosely. See p. 152 for a more cogent justification of Axiom 6 and T. D. Newton and E. P. Wigner, Localized states for elementary systems, *Rev. Modern Phys.* **21** (1949), 400–406, for a discussion of the problems in precisely localizing the position of a relativistic particle.

Page 129, 11th line after (6.13): (6.17) $\quad\to\quad$ (6.13)

Page 129, 13th line after (6.13): the the $\quad\to\quad$ the

Page 144, line 2: $e^{iq_\mu x^\mu} \quad\to\quad e^{-iq_\mu x^\mu}, \quad e^{-iq_\mu x^\mu} \quad\to\quad e^{iq_\mu x^\mu}$

Page 144, line 4: $e^{iq_\mu x^\mu} \quad\to\quad e^{-iq_\mu x^\mu}, \quad e^{ip_\mu x^\mu} \quad\to\quad e^{-ip_\mu x^\mu}$

Page 146, 3rd display: $v(\mathbf{q},t,\pi) \quad\to\quad v(\mathbf{q},t,\overline{\pi})$

Page 151, line 11: Delete the second "equation".

Page 152, 2nd display: $\leq 0 \quad\to\quad < 0$

Page 171, display after (6.70): $p^{\text{out}} \quad\to\quad \mathbf{p}^{\text{out}}$

Page 188, 2nd line of display after (6.103): $u_j^*(p_j^{\text{out}}) \quad\to\quad u_j^*(\mathbf{p}_j^{\text{out}})$ and $u_k(p_k^{\text{in}}) \quad\to\quad u_k(\mathbf{p}_k^{\text{in}})$

Page 214, (7.29): $\Delta(p) \quad\to\quad \widehat{\Delta}(p)$

Page 274, 2nd line before 2nd display: $1/2i \quad\to\quad i/2$

Page 276, lines 12 and 13: $\phi \quad\to\quad h$ (two places) and $f \quad\to\quad F$