Errata for Kinetic Theory: Classical, Quantum and Relativistic Descriptions by Richard L. Liboff

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Chapter 1

1. Last line of equation before Eq. (1.14), and Eq. (1.14) miss summation index l.

2. First line of page 9. The last index in the brackets should be $2N$ and not N, thus W_{2N}.

3. Eq. (1.23) misses summation index l.

4. In Eq. (1.24) the mismatched summation index should be l.

5. Eq. (1.26c) should read as $[A + B, F] = [A, F] + [B, F]$.

6. Eq. (1.26e) should read as $[A, [B, F]] + [B, [F, A]] + [F, [A, B]] = 0$. Note the first comma in the second term.

7. Line before Eq. (1.28) should refer to Eq. (1.26g) and not Eq. (1.26e).

8. Next equation after Eq. (2.14) should read as $q'_l = f_l(q_1, \ldots, q_N)$.

9. Eq. (4.4) should read as $\frac{dN}{d\Omega} \rightarrow \left(\frac{dN}{d\Omega}\right)' = \frac{dN}{d\Omega}$.

10. The last equality in the first equation after Eq. (4.10) would with less ambiguity read as $\int_\Omega \nabla \cdot (\mathbf{u}D)\, d\Omega$.

11. Eq. (4.11) would with less ambiguity read as $\frac{\partial D}{\partial t} + \nabla \cdot (\mathbf{u}D) = 0$.

12. Line after Eq. (4.21) should refer to Eq. (4.18) and not to Eq. (4.15).

13. Line after Eq. (4.27) should refer to Eq. (4.25) and not to Eq. (4.27).

14. Eq. (5.1) should have a time ordering operator $\hat{T}_+$ on the right hand side: $\hat{T}_+ e^{-i\int_0^t dt'\hat{\Lambda}} D(q, p, 0)$.

15. The left hand side of Eq. (5.3) should be $D(q, p, \Delta t)$ and not $D(q, p, t)$.

16. In Eq. (5.8) it should be $\mathbf{p}_s$ instead of p_s, as it here denotes a Cartesian momentum vector.

17. In the exponent of Eq. (5.19) it should be written $\mathbf{v}_s$ and not $\mathbf{v}_x$.

18. There should be no comma in the last equality of Eq. (5.21), thus $D(\mathbf{x}_1 - \mathbf{v}_1 t, \mathbf{v}_1, t)$.

19. In footnote 13 on page 34 there should be M and not m in the inequality.

20. After heading "The energy shell", the following sentence should read as: "Consider an isolated system with N particles with Hamiltonian..."

21. In the third row of the determinant in Eq. (6.20), the element in the first column should be D_{13} and not D_{31}.

22. In Eq. (7.6), after the arrow, it should be z_2 as the first argument and not z_1.

23. Eq. (8.3) should have $\mathcal{E}\left(e^{iax}\right)$ instead of $\mathcal{E}\left(e^{ia}\right)$.

24. Eq. (8.20) should have $(n + l)$ and not $(n + 1)$ as a factor in the denominator.

25. Eq. (7.23a) (which is after Eq. (8.20)) should have $n - 1$ instead of $n + 1$ as an argument of last $P()$.

26. Eq. (8.22) should have λ^r instead of λ'.

27. Eq. (8.46) should read $\operatorname{cov}(\xi', \xi'') = \mathcal{E}\left[(\xi' - \mathcal{E}(\xi'))(\xi'' - \mathcal{E}(\xi''))\right]$.

28. In the answer to Exercise 1.1, the partial derivative in the r-equation should read as $\frac{\partial L}{\partial r} = mr\dot{\theta}^2 - mg\cos\theta$.

29. A lot of typos in Exercise 1.4. Throughout the equation there should be q instead of I. Also, the dot over $V_i(t)$ is not needed. And there should be a factor of $\frac{1}{2}$ in front of double sum over M_{jk}.

30. In Exercise 1.18, the mentioned curve should be $y = a\cosh^{-1}(x/a) + b$.

31. In Exercise 1.22, the force should be written as $F_s = -\frac{\partial U}{\partial q_s} + \frac{\mathrm{d}}{\mathrm{d}t}\frac{\partial U}{\partial \dot{q}_s}$.

32. In Exercise 1.23, the joint-probability distribution should be

$$f_3 = \exp\left[-a\left(p_1^2 + p_2^2 + p_3^2\right)\right]$$
$$\times \left[\sin(bx_1)\sin(bx_2)\sin(bx_3)\cos(c(x_1x_2 + x_2x_3 + x_1x_3))\right].$$

Also, in d) the conditional distribution function should be something like $h_2(i, j|k)$.

33. In Exercise 1.27, one of the interval constants should be δ_t and not δ_1.

34. In Exercise 1.31, there should be written $p_1' = \frac{1}{\alpha}p_1$.

35. In Exercise 1.37, it should be written "your asnwer" instead of "you answer".

36. In Exercise 1.41, the first equation should be written as $\bar{x} = \bar{\bar{M}}x$. Also, in the answers there should be transpose and not hermitian conjugate quantities.

37. In Exercise 1.44, the sentence starting "State explicitly for p_r..." should be deleted.

38. In Exercise 1.47, the matrix $\hat{M}$ should be time-independent.

39. In Exercise 1.48, the initial distribution should be $D_0(q, p, t_0) = \sum_i q_i^2 \exp\left[-\sum_j p_j^2\right]$.

40. In Exercise 1.49, there should be $I_1 = I_2$ instead of $I_1 + I_2$ in b) and $\left[L_z, L^2\right]$ in c).

End of book

1. In the first line of page 529 page 507 and not 487 should be referred.