Errata in my books

A. M. Steane, October 15, 2021

This document lists and corrects errors in my books that I have become aware of so far (and found time to add to the document). Some were found by myself (with a sinking feeling); and many by other people. My thanks extend to kind readers who drew them to my attention, especially Nándor Bokor and Fausto Vezzaro. Many are small blips, typos, and the like. In one case[1] there is a completely missing term in an expression. Sorry about that! Please be assured that a lot of care was taken to avoid slip-ups before publication; long as the lists below may seem, I believe they are not bad compared to the average for first editions of books of this length.

1. Thermodynamics

p.19 table 3.2 the last "electric dipole" should be "magnetic dipole"
p.19 text asserts that the ratio of two extensive properties is intensive. This is only true for things like mass and volume whose extensivity has the same number of physical dimensions. But (for example) the ratio of a volume and an area is a length, all extensive.
p.36 update defn of Avagadro's number. (In SI it is now exact and the mass of a mole of ^{12}C is not)
p.40 The surface in the figure has been flipped $x \leftrightarrow y$. To correct, swap x and y axis labels including tick labels.
p.40 after (5.1) it should say the range of x is 0.5 to 1.5 (not 1 to 2)
p.41 after eqn (5.3) the second sentence should say "along a line of constant x"
p.58 eq (6.10) two subscripts are wrong, one on p, one on V in last two parts.
p.61 3rd full paragraph it should say "the gas heats" (not cools)
p.86 eqn (7.42) P on the right should be lower case
p.99 defn of mass unit (in SI) has now changed
p.101 triple point of water is at 273.16 not 273.15 kelvin.
p.139 end of example 10.1 use a not r in the formula
p.201 1st para "Since like charges attract" should be "Since unlike charges attract"
p.214 after (14.105) it should say 'question 14.8' not 'question 14.9'
p.288 top equation should have $_\perp$ after ∇
p.297 Ex. (20.3) 2nd answer should be 22 not 21 degrees C.
p.297 Ex. (20.4) is wrong. Replace the first sentence by:
Show that the angle subtended by a sphere of radius r at distance R from its centre is $\sin^{-1}(r/R)$. Show also that for isotropic radiation the flux in the direction at angle θ to the normal of a given small fixed area of surface is proportional to $\cos\theta$ (whether for the emitted or the incident flux).
p.301 Eqn (21.7) has a sign error and should read $e^{-E_a/k_{\rm B}T}$.
p.304 after the equations for x and y it should be y_i not y_1
p.306 Eqn (21.27) should read $\Delta\mathcal{A} \equiv \sum_i (\mu_i - \mu_i^{\ominus})\nu_i$
p.306 Eqn (21.28) has a sign error and should read $\Delta\mathcal{A} = -\Delta G = -\Delta H + T\Delta S$.
p.309, 310 The numbering of the exercises should read 21 not 12.

[1] in the section on electromagnetism in the General Relativity book

p.324 Footnote 4, $T_{\rm b}$ should be $T_{\rm m}$ in the equation.
p.329 Exercise 22.3 the data should say 18,000 feet, not 18 km.
p.365 box after (25.21) it should say "holds for some value of p, q", (not all values)
p.365 box in item (ii) it should be "$\lambda = B^{-1/q}$" (not p in the exponent)
p.393 fig 27.2 should have the arrow going the other way and the caption should then read "from cell 2 to cell 1".
p.394 penultimate line of (27.33) the first integration sign and the $d\mathrm{x}_{i\neq j}$ should be deleted.

minor issues

p.105 font of d in (8.16) and (8.17)
p.160 end of 1st paragraph insert 'one' so that it reads "from one place to another"
p.255 in last paragraph "joint of entropy" should be "joint entropy"

2. Science and Humanity

p. 218 trying stand → trying to stand

3. Relativity made relatively easy

p.137 before (6.71) it should be "disconnected from those with $\Lambda^0_0 \leq -1$".
p.141 Ex (6.10) should be $t = \sqrt{3}c/a_0$
p.164 Eqn for E'_y half way down the page, the $\partial A_y/\partial y$ term should be $\partial A_y/\partial t$
p.215 accent on o should be ő not ö (Hungary not Germany)
p.239 "assuming $\Phi/c^2 \ll 1$ → "assuming $|\Phi|/c^2 \ll 1$"
p.229 1st sentence "section 4.2.4" → "section 4.2.3"
p.244 after (9.56) insert m after "total energy that has to be supplied is"
p.312 after "Consider now..." it should read "can be read as g^{ab} with the second index lowered, so we have

$$g^a_{\ b} = \delta^a_b$$

p.296 Kerr horizon is not strictly spherical; text should be modified accordingly, e.g. "There is still a horizon, but also ..."
p.321 middle of page, $\partial_\mu(\rho_0 U^\mu)$ missing μ_0 on left hand side
p.324 "cannot be purely electric in another" → "cannot be purely magnetic in another"
p.339 (14.34) missing c^2,
p.339 just before (14.38) missing c, should be "$c\dot{t} = nv$"
p.365 2nd sentence should have $c^2 g$
p.367 Eqn (16.26) sign of last term
p.390 before (16.55) it should read "$\mathrm{d}V = (1/\gamma)\mathrm{d}x'\mathrm{d}y'\mathrm{d}z'$" (that is, replace γ by $(1/\gamma)$)
p.406 "gives a symmetric matrix" → "for a boost gives a symmetric matrix"
p.405 For the Bohr radius a more accurate value is 52918 fm. The classical radius is wrong, it should be 2.82 fm.

minor issues

replace "classical" by "Newtonian" in some places
p.51 before eqn 3.15 slight rewrite and possibly use θ_0 not θ' and get $\cos\theta = \cos\theta_0 + (v/c)\sin^2\theta_0$
p.61 "straight line motion" rather than "linear motion"
p.66 side note "do not to worry" → "do not need to worry"
p.73 After (4.67) missing full stop after "energy methods".
p.170 (7.6) use tilde for the new A and ϕ
p.211 penul. para; an inverted comma on the word 'gravity' is the wrong way round
p.340 Ex. (14.2) the second $\tilde{P}$ in the equation should be in the same font as the first.
p.246 "the the" → "the"
p.259 bottom: refer explicitly to fig 10.12
p.310 replace "signifies the contravariant..." by "signals the contravariant..."
p.333 after (14.18), 1st sentence next para: delete "eqn" before $U \cdot U$
p.326 after (13.18) remove comma after $\mathbb{F}$
p.326 last para "is is" → "is"; . Remove comma after $\mathbb{F}$
p.350 before 15.28 mention we will treat case where there is no proper torque
p.376 "from the battery to the capacitor" → "from the battery to the resistor"
various places: the symbol $\neq$ has not always printed correctly

index: add entries for 'paradox' and 'pancake'

4. General Relativity and Cosmology (Relativity made relatively easy, volume 2)

p.140 (11.40) and (11.41) in both equations ∂_a should be ∂_μ
p.180 (14.5) the up-down placement of indices needs to be corrected. One correct way to write it is

$$\mathbb{F}_{ab} = \partial_a A_b - \partial_b A_a$$

p.180 **Eqn (14.8) is missing a term**. It should read

$$\nabla^\mu \nabla_\mu A_a - R_{a\mu} A^\mu = -\mu_0 j_a$$

(the $R_{a\mu}$ term comes from the use of (15.1) to swap the derivatives)