**Post-publication Corrections** Einstein's Physics by Ta-Pei Cheng
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- p.7, the sentence above the displayed equation (1.12): Change the sentence from "We take the simplest....viscosity)" to

  For a region around the location of the solute particle so small that only the linear terms in a Taylor expansion of the velocity field $u_i(x)$ need to be considered

- p.137, 2nd line from the bottom: Replace the qualifying clause "and independently G.F. Fitzgerald (1851-1901) although only in qualitative terms" by "independent of G.F. FitzGerald (1851-1901) who had the same idea three years earlier" so that the sentence reads as

  In order to explain the null result of Michelson-Morley, Lorentz — independent of G.F. FitzGerald (1851-1901) who had the same idea three years earlier — proposed in 1892 that length of any object (under some yet to be understood molecular forces) would contract along the direction of relative motion with respect to the aether frame — by a factor of $\gamma$,

- p.150, 2nd line above the displayed equation at the bottom: After the words "unknown constant" and before the symbol "$a_1$", insert a sidenote numbered 2*a* so that the line reads as

  "unknown constant[2a] $a_1$ can then be fixed by the consistency condition of"

  with the added sidenote being:

  [2a] That the transformations $[L]$ and $\left[L^{-1}\right]$ have the same coefficient $a_1$ follows from the principle of relativity: the transformations of going from frame $O$ to $O'$ and the one from $O'$ to $O$ cannot be distinguished. One can in principle interchange the labels $O \leftrightarrow O'$ of the frames and keep the same coefficients. Equivalently, $a_1$ must necessarily be an even function of the relative velocity $v$.

- p.276, 2nd line below the subsection heading of **Asymptotic freedom and quark confinement**: After the words "effective interaction strength" and before the parenthetical remark "(the so called....)", insert a sidenote numbered 24*a* so that the line reads as

  "the important physical consequence that the effective interaction strength[24a] (the "

  with the added sidenote being

  [24a] In quantum field theory the interaction strength is always modified by the quantum fluctuations represented by the production and reabsorption of virtual particles. The effect of such a quantum cloud depends how closely in distance is the coupling being probed.

- p.312, at the end of the 1st sentence below the Section heading **A.2 The Gaussian integral**: Insert a sidenote numbered 3*a* after the first phrase so that the sentence reads as

  "Throughout the text[3a], we need the result of various Gaussian integrals."

  with the added sidenote being

  [3a] A notable example is the equipartition theorem of statistical mechanics, as discussed in Section 4.4.

**The following contains some less important typo corrections**

- p.5, the line above the displayed equation (1.4): Insert the word "incompressible" before the word "ideal" so that the line reads as "an incompressible ideal fluid, the Euler equation"

- p.6, the line below the displayed equation (1.7): Change the sign in $\tau_{ij} + \sigma_{ij}$ to $\tau_{ij} - \sigma_{ij}$

- p.6, the last term in equation (1.9) and the left-hand-side of equation (1.10): Change the normal $d$ to curly $\partial$ so that these two equations read as

$$W = \frac{d}{dt}\int\left(\frac{1}{2}\rho v^2\right)dV = \int \rho\mathbf{v}\cdot\left(\frac{\partial\mathbf{v}}{\partial t}\right)dV. \qquad ((1.9))$$

  The integrand can then be rewritten by using the Navier-Stokes equation of (1.8)

$$\frac{\partial v_i}{\partial t} = -\mathbf{v}\cdot\nabla v_i - \frac{1}{\rho}\partial_i p + \frac{1}{\rho}\partial_k\sigma_{ki} \qquad ((1.10))$$

- p.7, the 2nd line from the top: Change the subscripts in the repeated $\partial_k v_i$ in the inline equation to $\partial_k\sigma_{ki} = \eta\partial_k\left(\partial_k v_i + \partial_i v_k\right) = \eta\triangle v_i$.

- p.23, 8th line from top: Correct the reference equation number from (1.28) to (1.23) so that the sentence reads as "Their equivalence can be demonstrated by taking the gradient of both terms in Fick's first law (1.23) and turning the equation into (2.6),...."

- p.77, the displayed Eq.(6.13) and the line above this equation:

  Insert "$d\nu$" in two places ($\nu$ = Greek "nu", not italic Latin $v$)

  - insert $d\nu$ into the text equation so as to have $\langle E\rangle = \tilde{v}\rho_{\mathrm{W}}d\nu$
  - insert $d\nu$ into the displayed equation just prior to the second equal sign

  Together they read as:

we have $\langle E\rangle = \tilde{v}\rho_{\rm W}d\nu$ and, from the formula (6.5), the fluctuation result of

$$\left\langle \Delta E^2 \right\rangle_{\rm W} = \tilde{v}h\nu\frac{8\pi h\nu^3}{c^3}e^{-h\nu/k_{\rm B}T}d\nu = h\nu\left\langle E\right\rangle, \qquad (6.13)$$

- p.83, the displayed Eq.(6.33): Correct the subscript expression from "em-sp" to "sp-em" so that the equation reads as

$$\left(\frac{dP_n}{dt}\right)_{\rm sp-em} = A_n^m P_n \qquad (6.33)$$

- p.87, the displayed Eq.(6.51): Insert a missing "hat" on the letter $H$ on the right hand side of the first-line equation, so the it reads as

$$\begin{aligned}\hat{H}\left(\hat{a}_\pm\left|n\right\rangle\right) &= \hat{a}_\pm\left(\hat{H}\pm\hbar\omega\right)\left|n\right\rangle \\ &= \hat{a}_\pm\left(E_n\pm\hbar\omega\right)\left|n\right\rangle = \left(E_n\pm\hbar\omega\right)\left(\hat{a}_\pm\left|n\right\rangle\right). \qquad (6.51)\end{aligned}$$

- p.98, last line just ahead of section heading **7.22 Bose's counting of photon states:** Insert a missing "1/" in the text equation $\beta = k_BT$ so this line reads as "the parameter of $\alpha$ and $\beta = 1/k_BT$, etc."

- p.218, the 2nd line below the displayed Eq.(14.6):

  Correct the reference equation number from (15.22) to (14.5) so that the sentence reads "The GR field equation, being the generalization of the Newtonian field Eq. (14.5), must satisfy....."

- p.222, 6th line from the top: Change "Fig. 13.3" to "Fig. 13.2" so that the sentence now ends as "... just as the convergent particle trajectories shown in Fig. 13.2."