Physics of the Interstellar and Intergalactic Medium

Errata in the sixth printing.

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Which printing of the book you have can be determined from the last line on the copyright page:
First printing: 1 3 5 7 9 10 8 6 4 2
Second printing: 3 5 7 9 10 8 6 4 2
Third printing: 3 5 7 9 10 8 6 4
Fourth printing: 5 7 9 10 8 6 4
Fifth printing: 5 7 9 10 8 6
Sixth printing: 7 9 10 8 6

Errata in the sixth printing.

• Plate 5 caption, typo:
  ...seen in Plate 6. → ...seen in Plate 4.
  noted 2018.04.07 by L. Bouma.

• §3.8, p. 31, Eq. (3.48), typo: change
  \[ I_{\alpha} \propto A_{\alpha} h \nu_{\alpha} \int n[H(n)] ds \propto n^{-6} b_n \int n_e n(H^+) ds \]
  → \[ I_{\alpha} \propto A_{\alpha} h \nu_{\alpha} \int n[H(n+1)] ds \propto n^{-6} b_{n+1} \int n_e n(H^+) ds \]
  noted 2019.02.06

• §7.5, p. 69, Eq. (7.29), typo: missing a factor \( n_{\ell} \). Should read
  \[ \kappa_{\nu} = n_{\ell} \sigma_{\ell \rightarrow u} \left( 1 - \frac{n_{\alpha}}{n_{\ell}} \frac{g_{\alpha}}{g_{\ell}} \right) < 0 \]
  noted 2020.10.12 by Yan Liang.

• §9.8, p. 84, typo in line following Eq. (9.35): change
  \( (v_{\text{FWHM}}/2 \text{ km s}^{-1})^{2/3} \) → \( (v_{\text{FWHM}}/2 \text{ km s}^{-1})^{2/3} \).
  noted 2020.09.09 by Roohi Dalal.

• §10.2, sentence preceding Eq. (10.5): change
  ...the Gaunt factor from quantum-mechanical calculations is approximately
  → ...the Gaunt factor is approximately (Scheuer 1960)
  noted 2018.11.18 by S. Weinberg.

• §10.5, p. 97, Eq. (10.25), typo (missing factor of 2): should read
  \[ j_{b,\nu} = \frac{g_b}{g_{e} g_{i}} \frac{2h^4 \nu^3}{(2\pi mc_kT)^{3/2}c^2} \exp(i\nu - h\nu) / kT \sigma_{b,\nu}(\nu)n_e n_i \]
  noted 2021.02.14 by Shigenobu Hirose.
• §11.4, p. 110, Eq. (11.34), typo (was off by factor $10^4$): should read

$$= 6.53 \times 10^{-5} \text{arcsec} \left( \frac{D}{\text{kpc}} \right) \left( \frac{L}{10^{14} \text{cm}} \right)^{1/2} \left( \frac{(\Delta n_e)_{L, \text{rms}}}{10^{-3} \text{cm}^{-3}} \nu^2 \right)$$

noted 2021.10.25 by I. Wasserman.

• §15.5, p. 174, sentence preceding Eq. (15.36), typo:

$$N(\text{He}^{-})/N(\text{H}^{-}) < n_H/n_{\text{He}} \rightarrow N(\text{He}^{-})/N(\text{H}^{-}) < n_{\text{He}}/n_H$$

noted 2020.09.29 by H. Jia

• §16.5, p. 188, Eq. (16.16), typo: should read

$$\text{H}_2 + \text{CR} \rightarrow \text{H}_2^+ + e^- + \text{CR}$$

noted 2020.09.29 by R. Córdova

• §17.3, p. 195, footnote 3, typos:

...frequency $\sim 8 \times 10^{10}$ Hz... → ...frequency $\sim 1.1 \times 10^{10}$ Hz...

...$\sim 10^2$ precession periods. → ...$\sim 18$ precession periods.

noted 2020.10.02

• §20.1, p. 229, typo just below Eq. (20.2): replace

...unit time that level $x$ will... → ...unit time the level $u$ will...

noted 2020.10.12 by Yan Liang

• §22.6, p. 256, footnote 6: the DDSCAT website has moved. Change


noted 2019.03.25

• §23.3.2, p. 268, typo: Si-O-Si bending mode → O-Si-O bending mode

noted 2020.10.12

• §25.3, p. 299, typo following Eq. (25.11): change

...charge $Z_{gr} = Ua$ can... → ...charge $Z_{gr} = Ua/e$ can...

noted 2021.06.25 by Yu Fung Wong.

• §28.3, p. 328, 4th paragraph, typo: change distance from $\Theta_1$Ori C to the Orion Bar ionization front: $\sim 7.8 \times 10^{18}$ cm → $\sim 7.8 \times 10^{17}$ cm

noted 2020.10.26

• §34.4, p. 386, Eq. (34.10): sign mistake on RHS; change

$$-4\pi r^2 \kappa \frac{dT}{dr} \rightarrow 4\pi r^2 \kappa \frac{dT}{dr}$$

noted 2019.04.18 by G. Halevi.
§37.1, p. 413, 2nd paragraph: Change
Cases of astrophysical interest will normally have..
→
Many cases of astrophysical interest will have...
noted 2018.04.09.

§37.1, Eq. (37.8): The correction terms for \( u_R, x_R, u_D, \) and \( x_D \) can be improved by analyzing the full cubic equation (37.3): change
\[
\begin{align*}
  u_R & \approx 2c_2 & \rightarrow & \quad u_R \approx 2c_2 \left[ 1 - \frac{2c_1^2 - 3v_{A1}^2}{8c_2^2} \right] \\
  x_R & \approx \frac{1}{2} + \frac{2c_1^2 + v_{A1}^2}{16c_2^2} & \rightarrow & \quad x_R \approx \frac{1}{2} \\
  u_D & \approx \frac{2c_1^2 + v_{A1}^2}{4c_2} & \rightarrow & \quad u_D \approx \frac{2c_1^2 + v_{A1}^2}{4c_2} \left[ 1 + \frac{2c_1^2 + v_{A1}^2}{8c_2^2} \right] \\
  x_D & \approx \frac{4c_2^2}{2c_1^2 + v_{A1}^2} & \rightarrow & \quad x_D \approx \frac{4c_2^2}{2c_1^2 + v_{A1}^2} \left[ 1 - \frac{8c_2^2}{v_{A1}^2} \right]
\end{align*}
\]
noted 2018.02.19 by Woong-Tae Kim.

Appendix B, p. 476: typo: incorrect units for Stefan-Boltzmann constant \( \sigma \):
\[
5.67040 \times 10^{-5} \text{ erg s}^{-1} \text{ cm}^{-3} \text{ K}^{-4} \quad \rightarrow \quad 5.67040 \times 10^{-5} \text{ erg s}^{-1} \text{ cm}^{-2} \text{ K}^{-4}
\]
noted 2019.05.14 by Aaron Tran.

Appendix G, p. 503, typo just before Eq. (G.7): change
...solution \( x_0 = e^{-i\omega t} \) \rightarrow ...solution \( x = x_0 e^{-i\omega t} \).
noted 2019.02.11

Appendix I, p. 507, typo (15.78 \rightarrow 31.56): Eq. (I.7) should read
\[
\frac{Ze^2}{a_0kT} = \frac{31.56Z}{T_4}
\]
noted 2019.01.14.

Appendix J, p. 510, Eq. (J.8): missing sign:
\[
Y_3 = E_{grav} = \frac{1}{2} \int dV_1 \int dV_2 G \frac{\rho(r_1)\rho(r_2)}{|r_1 - r_2|}
\rightarrow
Y_3 = E_{grav} = -\frac{1}{2} \int dV_1 \int dV_2 G \frac{\rho(r_1)\rho(r_2)}{|r_1 - r_2|}
\]
noted 2020.11.13