Physics of the Interstellar and Intergalactic Medium
Errata in the second and third printings.
Updated 2018.04.09

Bruce T. Draine
Which printing of the book you have can be determined from the last line on the copyright page:

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Errata in the second and third printings.

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

- §1.2, p. 8, Table 1.4: change abundance of P from $N_P/N_H = 3.23 \times 10^{-7}\pm 0.03$, $M_P/M_H = 1.00\times 10^{-5}$ to $N_P/N_H = 2.82\times 10^{-7}\pm 0.03$, $M_P/M_H = 8.73 \times 10^{-6}$
  noted 2013.10.21 by Bon-Chul Koo.

- §3.6, p. 28, Eq. (3.31), typo: factor of 2 error. Eq. (3.31) should read
  \[
  \sigma_{tr,ul}(E) = \frac{1}{2} \frac{g(X_\ell)}{g(X_\ell^+)} \frac{(I_{X,\ell} + E)^2}{E m_e c^2} \sigma_{pi,\ell u}(h\nu = I_{X,\ell} + E),
  \]
  noted 2015.06.01 by E. B. Jenkins

- §3.7, p. 28, Eq. (3.33), typo: sign error. Change $e^{-I_n/kT}$ → $e^{I_n/kT}$.
  noted 2017.02.09

- §5.2.2, p. 50, 3rd paragraph, typos: change
  para-H$_2$O must have $K_{-1} + K_{+1}$ odd →
  para-H$_2$O must have $K_{-1} + K_{+1}$ even and
  ortho-H$_2$O must have $K_{-1} + K_{+1}$ even →
  ortho-H$_2$O must have $K_{-1} + K_{+1}$ odd
  noted 2015.01.15 by Neal Evans.

- §8.3, p. 74, Eq. (8.26), typos: $T^\upmu_{\nu}(v)$ → $T^\nu_{\upmu}(v)$ (two occurrences).
  noted 2013.02.14 by Munan Gong.

- §9.10, Table 9.4, p. 88, typos: for C II and N III, change $^2D^o_J$ →$^2D_J$ for $J = 3/2$ and $J = 5/2$.
  noted 2015.02.12 by Seomyeong Oh.

- §11.4, p. 110, Eq. (11.35) should read
  \[
  \nu \ll \frac{e^2(\Delta n_e)_{L,rms}}{2\pi m_ec} (2LD)^{1/2} = 1\times 10^3 \text{ GHz} \frac{(\Delta n_e)_{L,rms}}{10^{-3} \text{ cm}^{-3}} \left( \frac{L}{10^{14} \text{ cm}} \frac{D}{\text{kpc}} \right)^{1/2}.
  \]
noted 2013.02.03 by W. Vlemmings.

- §12, p. 121, Table 12.1, typos:
  - CMB, $T = 2.725$ K: $4.19 \times 10^{-13} \rightarrow 4.17 \times 10^{-13}$
  - $T_2 = 4000$ K, $W_2 = 1.65 \times 10^{-13}$: $3.19 \times 10^{-13} \rightarrow 3.20 \times 10^{-13}$
  - $T_3 = 7500$ K, $W_3 = 1 \times 10^{-14}$: $2.29 \times 10^{-13} \rightarrow 2.39 \times 10^{-13}$
  - Starlight total: $1.05 \times 10^{-12} \rightarrow 1.06 \times 10^{-12}$
  - ISRF total: $2.19 \times 10^{-12} \rightarrow 1.98 \times 10^{-12}$

noted 2012.11.08

- §12.5, p. 123, below eq. (12.4): change
  - $W_1$ by 40%, from $5 \times 10^{-13}$ to $7 \times 10^{-13}$.
  - $W_1$ by 75%, from $4 \times 10^{-13}$ to $7 \times 10^{-13}$, and raised $W_2$ from $1.0 \times 10^{-13}$ to $1.65 \times 10^{-13}$.

noted 2014.11.11 by S. Bianchi.

- §13.1, pp. 128, eq. (13.1), (13.3), (13.4): for notational consistency with the rest of the chapter, change $\sigma_{pe} \rightarrow \sigma_{pi}$

noted 2018.01.07 by L. Bouma.

- §13.1, p. 130, second paragraph, typo:
  - ...to $3 \times 10^{-10}$ s$^{-1}$ for Si $\rightarrow ...to 3 \times 10^{-9}$ s$^{-1}$ for Si

noted 2017.03.05

- §14.6, p. 154, Table 14.8 update: replace
  - $H_3^+ + e^- \rightarrow H_2 + H$ with $1.1 \times 10^{-7} T_2^{-0.56}$ McCall et al. (2004)
  - $H_3^+ + e^- \rightarrow H + H + H$ with $8.9 \times 10^{-8} T_2^{-0.48}$ McCall et al. (2004)
  - $H_3^+ + e^- \rightarrow H_2 + H$ with $5.0 \times 10^{-8} T_2^{-0.48}$ McCall et al. (2004)

noted 2013.04.03

- §14.9, p. 159, typo: factor of 2 error. Eq. (14.41) should read
  
  $$
  \sigma_{tr}(E) = \frac{g_e}{2g_u} \frac{(I + E)^2}{Emc^2} \sigma_{pi}(h\nu = I + E) .
  $$

noted 2015.06.01 by E. B. Jenkins.

- §14.9, p. 160, typo: factor of 2 error. Eq. (14.43) should read
  
  $$
  \frac{(\sigma v)_{tr}}{(\sigma v)_{ci}} \approx 2\pi \alpha^3 f_{pi} \frac{I}{KT} e^{I/kT} ,
  $$

noted 2015.06.01 by E. B. Jenkins.

- §14.9, p. 160, typo: factor of 2 error. Eq. (14.44) and following should read
  
  $$
  \frac{I}{kT} e^{I/kT} = \frac{C}{2\pi f_{pi} \alpha^3} .
  $$

noted 2015.06.01 by E. B. Jenkins.
If $C \approx 1$ and $f_{pi} \approx 1$, this has solution $I/kT \approx 10.6$. ... noted 2015.06.01 by E. B. Jenkins.

- Table 15.1, p. 164, typo: $M/ M_\odot$ for O6.5V star: 38.0 $\rightarrow$ 28.0 noted 2013.01.31

- §16.4, p. 186, Eq. (16.9, 16.10), update: change

\[
\begin{align*}
H_3^+ + e^- &\rightarrow H_2 + H \ , \ k_{16.9} = 4.1 \times 10^{-8} T_2^{0.52} \text{ cm}^3 \text{ s}^{-1}, \\
H_3^+ + e^- &\rightarrow H + H + H \ , \ k_{16.10} = 7.7 \times 10^{-8} T_2^{-0.52} \text{ cm}^3 \text{ s}^{-1},
\end{align*}
\]

to

\[
\begin{align*}
H_3^+ + e^- &\rightarrow H_2 + H \ , \ k_{16.9} = 5.0 \times 10^{-8} T_2^{-0.48} \text{ cm}^3 \text{ s}^{-1}, \\
H_3^+ + e^- &\rightarrow H + H + H \ , \ k_{16.10} = 8.9 \times 10^{-8} T_2^{-0.48} \text{ cm}^3 \text{ s}^{-1},
\end{align*}
\]

and cite McCall et al. (2004) for $k_{16.9}$ and $k_{16.10}$. noted 2013.04.03

- §16.4, p. 187, typo: in paragraph below Eq. (16.15), change

\[
x_e \approx x_M \approx 1.9 \times 10^{-4} \quad \rightarrow \quad x_e \approx x_M \approx 1.1 \times 10^{-4} \quad (\text{see Eq. 16.3})
\]

noted 2013.04.04

- §16.5, p. 189, Fig. 16.3. The original figure was evaluated with a too-large rate for $k_{16.19}$. The figure has been redone, now also showing the result if $\zeta_{CR} = 1 \times 10^{-17} \text{ s}^{-1}$:
**Figure 16.3** Fractional ionization in a dark cloud, estimated using Eq. (16.25), with the grain recombination rate coefficients set to $k_{16.20} = k_{16.22} = 10^{-14} \text{cm}^3\text{s}^{-1}$ (see Fig. 14.6). The dashed line is a simple power-law approximation $x_e \approx 2 \times 10^{-5} (n_H/\text{cm}^{-3})^{-1/2}$.

noted 2013.03.05.

- §18.5, p. 214, Eq. (18.11): Change...
  $\Omega_{03}$ is approximately independent of $T_e$, we have
  $$\frac{n(\text{O III})}{n(\text{H}^+)} = C \frac{I(\text{O III}][5008)}{I(H \beta)} T_4^{0.37} e^{2.917/T_4},$$  \hspace{1cm} (18.11)
  to
  $$\Omega_{03} \propto T_4^{0.12} \text{ (see Appendix F), we have}$$
  $$\frac{n(\text{O III})}{n(\text{H}^+)} = C \frac{I(\text{O III}][5008)}{I(H \beta)} T_4^{-0.49} e^{2.917/T_4},$$  \hspace{1cm} (18.11)

noted 2015.02.27

- §19.3, p. 222: revise value for $A_{10}$: replace $A_{10} = 6.78 \times 10^{-8} \text{s}^{-1} \rightarrow A_{10} = 7.16 \times 10^{-8} \text{s}^{-1}$ (see Eq. 5.7).
  noted 2013.04.17

- §19.3, p. 223: revised numbers according to revised value for $A_{10}$:
  noted 2013.04.17

- §23.1, p. 265, typo: lower oscillator strength $f(\text{C II}][2325 \text{Å}) = 1.0 \times 10^{-7}$
  \rightarrow larger oscillator strength $f(\text{C II}][2325 \text{Å}) = 1.0 \times 10^{-7}$
  noted 2012.12.27

- §26.2, p. 308, Eq. (26.23), numerical error: should read
  $$\frac{\omega}{2\pi} = 4.6 \text{ GHz} \left( \frac{T_{\text{rot}}}{100 \text{ K}} \right)^{1/2} \left( \frac{0.001 \mu\text{m}}{a} \right)^{5/2}$$  \hspace{1cm} (26.23)
  noted 2014.06.27 by B. Jiang.

- §28.3, p. 328, 4th paragraph, typo: change distance from $\Theta_1$ Ori C to the Orion Bar ionization front: $\sim 7.8 \times 10^{18} \text{ cm} \rightarrow \sim 7.8 \times 10^{17} \text{ cm}$
  noted 2015.04.07

- §29.1, p. 332, 1st paragraph, typo: $b = 0 \rightarrow b = 90^\circ$, so that the 2nd sentence reads
  $...\text{ vary as } N(\text{H I}, b) = N(\text{H I}, b = 90^\circ)/\sin |b| = N_0 \csc |b|$, noted 2012.11.04 by R. Simons.
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- §31.4, p. 349, Eq. (31.24), typo: on RHS, change

\[
\frac{\pi e^2}{m_e c^2 h} \sum_u f_{\ell u} \lambda_{\ell u} u_{\lambda} f_{\text{shield}, \ell u} \rightarrow \frac{\pi e^2}{m_e c^2 h} \sum_u f_{\ell u} \lambda_{\ell u} u_{\lambda} f_{\text{shield}, \ell u} \rho_{\text{diss}, u}
\]

noted 2013.04.12 by Ai-Lei Sun.

- §32.9, p. 368, just before eq. (32.11), typo: change

\[A_V / N_H = 1.87 \times 10^{21} \text{ cm}^{-2} \rightarrow A_V / N_H = 5.3 \times 10^{-22} \text{ mag cm}^{-2}.\]

noted 2016.03.04 by Ilsang Yoon.

- §32.11, p. 372, prepenultimate paragraph: terminological correction. Change “core” to “clump” (three occurrences).

noted 2015.04.16

- §34.4, p. 387, typo: Eq. (34.17) is off by a factor 3, and should read

\[
t_{\text{evap}} = \frac{3M}{2\dot{M}} = \frac{25 \times 2.3(n_H)_{c} R_{c}^{2} m_{e}^{1/2} e^{4 \ln \Lambda}}{8 \times 0.87(kT_{h})^{2.5}} \tag{34.17}
\]

Eq. (34.18) is numerically correct, but should have shown the dependence on \( \ln \Lambda \):

\[
= 5.1 \times 10^{4} \gamma T \left( \frac{(n_{H})_{c}}{30 \text{ cm}^{-3}} \right) \left( \frac{R_{c}}{10^{3} \text{ pc}} \right)^{2} \left( \frac{T_{h}}{10^{7} \text{ K}} \right)^{-2.5} \left( \frac{\ln \Lambda}{30} \right) . \tag{34.18}
\]

noted 2013.01.05 by B. Hensley.

- §36.2.3, p. 400, Eq. (36.10): \( v_x \) multiplying \( B_y B_x \) should be \( v_y \), and \( v_x \) multiplying \( B_z B_x \) should be \( v_z \).

noted 2015.12.17 by J. Miralda-Escudé.

The equation should read

\[
\left\{ \left[ \frac{\rho v^2}{2} + \frac{\gamma p}{\gamma - 1} \right] v_x + \frac{(B_y^2 + B_z^2)}{4\pi} v_x - \frac{(B_x B_y v_y + B_x B_z v_z)}{4\pi} - \kappa \frac{dT}{dx} \right\}_1 = \\
\left\{ \left[ \frac{\rho v^2}{2} + \frac{\gamma p}{\gamma - 1} \right] v_x + \frac{(B_y^2 + B_z^2)}{4\pi} v_x - \frac{(B_x B_y v_y + B_x B_z v_z)}{4\pi} - \kappa \frac{dT}{dx} \right\}_2. \tag{36.10}
\]

- §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, p. 413, typo just above Eq. (37.3):

\[J \nu/c = \rho_{1} u_{1} \nu / \mu_{1} c \ll \rho_{1} (u_{1}^{2} + c_{1}^{2} + B_{1}^{2} / 8\pi).\]

→

\[J \nu/c = \rho_{1} u_{1} \nu / \mu_{1} c \ll \rho_{1} (u_{1}^{2} + c_{1}^{2}) + B_{1}^{2} / 8\pi.\]

noted 2016.12.08 by Ryohei Nakatani.
• §37.1, Eq. (37.8): The correction term for $x_R$ is not accurate for magnetized I-fronts: change

$$x_R \approx \frac{1}{2} + \frac{2c^2_1 + v_{A1}^2}{16c^2_2} \quad \rightarrow \quad x_R \approx \frac{1}{2}$$


noted 2018.02.19 by Woong-Tae Kim.

• §37.1 and §37.2, pp. 414-416: the mathematics is correct, but the “weak-type”, and “strong-type” terminology was unfortunately inverted: all occurrences of “weak-type” should be changed to “strong-type”, and vice-versa:

- §37.1.1, p. 414, first paragraph:
  ...are called strong R-type. Strong R-type solutions...
  →
  ...are called weak R-type. Weak R-type solutions...

- §37.1.1, p. 414, second paragraph:
  ...referred to as weak R-type...
  →
  ...referred to as strong R-type...

- §37.1.1, p. 414, second paragraph:
  Hence, only strong R-type I-fronts are physically relevant.
  →
  Hence, only weak R-type I-fronts are physically relevant.

- §37.1.2, p. 414, first paragraph:
  ...is termed weak D-type.
  →
  ...is termed strong D-type.

- §37.1.2, p. 414, second paragraph:
  ...is termed strong D-type.
  →
  ...is termed weak D-type.

• Fig. 37.1 and caption should be:

![Figure 37.1](image)

**Figure 37.1** $u_2/u_1 = \rho_1/\rho_2$, as a function of the velocity $u_1$ of the I-front relative to the neutral gas just ahead of the I-front, for D-type and R-type ionization front solutions (see text) for an example with $c_1 = 1 \text{ km/s}$, $v_{A1} = 2 \text{ km/s}$, and $c_2 = 11.4 \text{ km/s}$. The astrophysically relevant solutions are the strong D-type and weak...
R-type cases, shown as heavy curves. There are no solutions with \( u_1 \) between \( u_D \) and \( u_R \).

- §37.1, p. 416, first paragraph:
  ...will be strong R-type, ... \( \rightarrow \) ...will be weak R-type, ...

- §37.1, p. 417, fourth line:
  ...will now be weak D-type, ... \( \rightarrow \) ...will now be strong D-type, ...

noted 2016.12.06 by Ryohei Nakatani.

- §37.2, p. 418, typos:
  ...moving at a speed \( v_s \) that will be close to (just slightly larger than) the speed of the I-front:
  \[
  v_s \approx V_i .
  \]  
  \( (37.21) \)

\( \rightarrow \)

...moving at a speed \( V_s \) that will be close to (just slightly larger than) the speed of the I-front:

\[
V_s \approx V_i .
\]

\( (37.21) \)

noted 2016.12.08 by Ryohei Nakatani.

- §38.3, p. 428, last paragraph, typo:

\[
\dot{M}_w \approx 2 \times 10^{-5} \, \text{km s}^{-1} \rightarrow \dot{M}_w \approx 2 \times 10^{-5} \, \text{M}_\odot \, \text{yr}^{-1}
\]

noted 2015.12.17 by J. Miralda-Escudé.

- §39.1.2, p. 433, Eqs. (39.22, 39.23, 39.24), typos: the factor \( (E_{51} n_0^2) \) should be \( (E_{51} n_0^2) \), so that the equations should read

\[
\begin{align*}
  v_s(t_{\text{rad}}) &= 188 \, \text{km s}^{-1} (E_{51} n_0^2)^{0.07} , \\
  T_s(t_{\text{rad}}) &= 4.86 \times 10^5 \, \text{K} (E_{51} n_0^2)^{0.13} , \\
  kT_s(t_{\text{rad}}) &= 41 \, \text{eV} (E_{51} n_0^2)^{0.13} .
\end{align*}
\]

\( (39.22, 39.23, 39.24) \)

noted 2012.10.02 by G.B. Field.

- §39.4, p. 438, Eqs. (39.35) and (39.36), typos: they should read

\[
\begin{align*}
  N_\text{SN} &= 0.24 S_{-13} E_{51}^{1.26} n_0^{-1.47} c_{s,6}^{-1.3/5} , \\
  N_\text{SN} &= 0.48 S_{-13} E_{51}^{1.26} n_0^{-0.17} p_4^{-1.30} ,
\end{align*}
\]

\( p_4 \equiv \frac{p}{10^4 \, \text{cm}^{-3} \, \text{K}} \)

\( (39.35, 39.36) \)

noted 2014.06.27 by B. Jiang.

- §39.4, p. 438, Eq. (39.37), typos: Eq. (39.37) should read

\[
\frac{p}{k} = S_{-13}^{0.77} E_{51}^{0.97} n_0^{-0.13} \times 5700 \, \text{cm}^{-3} \, \text{K}
\]

\( (39.37) \)

noted 2014.06.27 by B. Jiang.
• §40.5, p. 447, typo: protons with \( E \lesssim 10^5 \) GeV have \( R_{\text{gyro}} \ll 10^{-4} \) pc → protons with \( E \lesssim 10^3 \) GeV have \( R_{\text{gyro}} < 10^{-4} \) pc
  noted 2011.04.26

• §41.3, p. 456, typo: missing factor of \( G \). Eq. (41.36) should read

\[
E_{\text{grav}} = -\frac{G}{2} \int dV_1 \int dV_2 \frac{\rho(r_1)\rho(r_2)}{|r_1 - r_2|} \quad (41.36)
\]

noted 2015.04.30 by J. Greco.

• §41.3.2, p. 457, Eq. (41.46), typo: replace

\[
E_{\text{mag}} = \frac{B_{\text{rms}}^2 - B_0^2}{8\pi} V \quad \rightarrow \quad E_{\text{mag}} = \frac{B_{\text{rms}}^2}{8\pi} V
\]

noted 2011.04.28

• §41.4, p. 460, Eq. (41.55), typo: \( m_m \rightarrow m_n \)
  noted 2013.04.30 by K. Silsbee

• Appendix A, p. 473, typo: entry for \( a_0 \) should read
  ...
  Bohr radius \( \equiv \hbar^2/m_e e^2 \) ...
  noted 2013.03.05 by Wenhua Ju.

• Appendix D, p. 481: corrected typos:
  \( \text{F VI} \rightarrow \text{VII}: \quad I = 147.163 \rightarrow 157.163 \)
  \( \text{Ne VI} \rightarrow \text{VII}: \quad I = 154.214 \rightarrow 157.934 \)
  \( \text{Ti III} \rightarrow \text{IV}: \quad I = 24.492 \rightarrow 27.492 \)
  \( \text{Ti V} \rightarrow \text{VI}: \quad I = 123.7 \rightarrow 99.299 \)
  \( \text{Zn VI} \rightarrow \text{VII}: \quad I = 133.903 \rightarrow 108.0 \)
  noted 2015.07.10 by Guangtun Ben Zhu.

• Appendix E, p. 495: \( ^2\text{D}^o_{3/2,5/2} \) energy levels were misplotted for S II and Ar IV.
  noted 2013.10.21 by Bon-Chul Koo.
  Corrected figure [Opportunity taken to update energy Ar IV energy levels]
using latest values from NIST Atomic Spectra Database (ver. 5.1 [Online]):

- Appendix F, Table F.2, p. 497, typo: the first transition listed for S III: change $3P^0_0 - 1P^0_0 \rightarrow 3P^0_0 - 3P^1_1$ noted 2016.10.03 by C.D. Kreisch.

- Appendix F, Table F.3, p. 498: updated electron collision strengths for O I:

<table>
<thead>
<tr>
<th>Ion</th>
<th>$3P^1_2 - 3P^1_1$</th>
<th>$3P^1_1 - 3P^1_0$</th>
<th>$3P^1_0 - 3P^0_0$</th>
<th>$3P^1_2 - 3P^0_0$</th>
<th>$3P^1_1 - 3P^0_0$</th>
<th>$3P^1_0 - 3P^0_0$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Omega_{ul}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O I</td>
<td>0.0105 $T_4^{0.4861 + 0.0054 \ln T_4}$</td>
<td>0.00459 $T_4^{0.4507 - 0.0066 \ln T_4}$</td>
<td>0.00015 $T_4^{0.4709 - 0.1396 \ln T_4}$</td>
<td>0.00312 $(2J + 1) T_4^{0.945 - 0.001 \ln T_4}$</td>
<td>0.00353 $(2J + 1) T_4^{0.900 - 0.135 \ln T_4}$</td>
<td>0.0893 $T_4^{0.662 - 0.089 \ln T_4}$</td>
</tr>
</tbody>
</table>

- Appendix F, Table F.6, p. 501: The table title should be “Rate Coefficients for ... Deexcitation...” rather than “... Excitation...”. noted 2015.07.03

- Appendix F, Table F.6, p. 501: the rates for entries 5 and 6 should be interchanged, so that entries 4-6 read...
\begin{align*}
\text{H} & \quad \text{CI} \quad ^3P_0 - ^3P_1 \quad 1.26 \times 10^{-10} T_2^{0.115 \pm 0.057 \ln T_2} \quad b \\
\text{H} & \quad \text{CI} \quad ^3P_0 - ^3P_2 \quad 8.90 \times 10^{-11} T_2^{0.228 \pm 0.046 \ln T_2} \quad b \\
\text{H} & \quad \text{CI} \quad ^3P_1 - ^3P_2 \quad 2.64 \times 10^{-10} T_2^{0.231 \pm 0.046 \ln T_2} \quad b
\end{align*}

noted 2015.07.03 by Munan Gong.

- Appendix F, Table F.6, p. 501: the rates for entries 23-28 should be changed to

\begin{align*}
\text{H}_2 \text{(para)} & \quad \text{OI} \quad ^3P_2 - ^3P_1 \quad 1.49 \times 10^{-10} T_2^{-0.369 \pm 0.026 \ln T_2} \quad h \\
\text{H}_2 \text{(para)} & \quad \text{OI} \quad ^3P_2 - ^3P_0 \quad 2.37 \times 10^{-10} T_2^{-0.395 \pm 0.005 \ln T_2} \quad h \\
\text{H}_2 \text{(ortho)} & \quad \text{OI} \quad ^3P_2 - ^3P_0 \quad 2.23 \times 10^{-10} T_2^{-0.284 \pm 0.035 \ln T_2} \quad h \\
\text{H}_2 \text{(para)} & \quad \text{OI} \quad ^3P_1 - ^3P_0 \quad 2.10 \times 10^{-12} T_2^{0.117 \pm 0.070 \ln T_2} \quad h \\
\text{H}_2 \text{(ortho)} & \quad \text{OI} \quad ^3P_1 - ^3P_0 \quad 3.00 \times 10^{-12} T_2^{0.792 \pm 0.188 \ln T_2} \quad h
\end{align*}

noted 2015.08.24 by E.B. Jenkins.

- Appendix I, p. 506, typo: \( \sim E_{u\ell}/h \rightarrow \sim h/E_{u\ell} \)

noted 2013.02.07 by Munan Gong.

- Appendix J, p. 510, Eq. (J.13), typo:

\[ \Pi_0 \equiv \oint dS \cdot r_p \quad \rightarrow \quad \Pi_0 \equiv \frac{1}{3} \oint dS \cdot r_p \]

noted 2017.03.08.