Errata
for
Nuclear Reactor Analysis
A. F. Henry
MIT Press, Cambridge, MA
1975

http://www.corephysics.com/
ERRATA – Nuclear Reactor Analysis

Page 32
line 11 from bottom; full → fuel

79
Eq. (3.3.28): add \( \nu \)

92
space → spaced: Heading, 3rd paragraph

105
\( n_j(\xi, E) \rightarrow n_j(\xi) \)

103
(3.3.27) → (3,3.21); (line 1 and line 4)

\( \sqrt{133} \)
extra bracket ] in Eq. (4.7.13)

\( \sqrt{145} \)
"mean paths" → mean free paths; line 2 from bottom

315
it it → it is; line 12 from top

364
\( \Sigma_s \ (E'\rightarrow E, \mu) \rightarrow \Sigma_s \ (E'\rightarrow E, \mu_o) \); line 3 from top

470
eq. (11.2.26); \( k \rightarrow K \)

\( \rho, 137 \)

\( \frac{\Pi}{L_2} \rightarrow \frac{\Pi Z}{L_3} \)

\( \rho, 30 \)

4.30 \( R \) should be outside bracket
Errata - Nuclear Reactor Analysis, by Allan F. Henry

page 3 Last word: atomic mass

page 5 3rd paragraph; line 8: two billion → six billion

page 7 5th line: α particle — occasionally an electron → α particle, or an electron

page 8 The paragraph beginning "Now, even in..." change both $10^{-12}$'s to $10^{-13}$'s.

page 8 The paragraph beginning "If we were...": change ellipse to ellipsoid,

page 9 Paragraph beginning "Neutrons ..." 9th line: $14 \rightarrow 35$

11th line: an electron → two electrons

page 11 First sentence after Eq(1.4.1) "The curve (1.4.1) etc." "An approximation to the curve (1.4.1) etc."

page 27 8 lines from bottom $\sim 100\text{Kev} \sim 100$ ev.

page 30 1st line: the the → the

page 37 References: Physics of Nuclear Kinetics is by G.R. Keepin (not Keeping).

page 41 Paragraph beginning "Finally ..." 3rd line: remove words "of direction"

Page 44 Eq(2.3.6), denominator: $N(r,\Omega,E)|_{\alpha=0} \quad N(r,\Omega,E)|_{\alpha=0}$

Page 47 Equation (2.4.6): The integral should contain $d\Omega (\sin \theta) / 4\pi$

page 48 Equa. 2.4.10 $\sigma_1(E-E', \Omega \cdot \Omega') \rightarrow \sigma_1(E-E', \Omega \cdot \Omega')$
The paragraph, in the middle of the page, beginning "Since \( E, E', \) and \( \mu_0 \) are all measured ..." is incorrect. Disregard it.

Also, the paragraph immediately following the above is arranged improperly. It should read:

"Rate at which neutrons in \( \text{d}V \) are scattered elastically from the beam \( \text{d}^2\Omega \text{d}E \) into the conical shell \( \text{d}\mu_0/2 \)

\[
= \sum_j \sum_s \langle \xi_j^s (E, \mu_0) \rangle \frac{\text{d}\mu_0}{2} \mathcal{V} \text{d}N \left( \hat{r}, \hat{\Omega}, E \right) \text{d}V \text{d}\Omega \text{d}E
\]

and the rate at which neutrons are scattered elastically from the beam \( \text{d}^2\Omega \text{d}E \) into the energy range \( dE' \)

\[
= \sum_j \sum_s \langle \xi_j^s (E \rightarrow E') \rangle dE' \mathcal{V} \text{d}N \left( \hat{r}, \hat{\Omega}, E \right) \text{d}V \text{d}\Omega \text{d}E.
\]

Paragraph after Eq(2.5.8), third line: \( \cos \phi \rightarrow \cos \theta \)

1st paragraph: Equation 2.5.4 \( \rightarrow \) Equation 2.5.14

Delete 1st 3 lines beginning "It should also be noted ..."

2 lines above (2.6.1): At point \( r \rightarrow \) containing point \( r \)

Equa. 2.6.5: \( f_j^s (E, \mu_0) \rightarrow f_j^s (E, \mu_0) \)

Problem 2: \( N \) is known to be \( 10^4 \) neutrons per \( \text{cm}^3 \) ...

Problem 6: The first equation should contain \( \mu_c \) instead of \( \mu \)

Problem 14 b & c: neutrons/\( \text{cm}^2 \) ... (not neutrons/\( \text{cc} \) ...)

The word "is" is missing from a sentence in the last paragraph. "The reason for this is that, ..."

Statement 2: "All the elements...real and positive." "All the elements...real and have the same sign."

Top of page: "... the function has a small value (\( \lesssim 1.75 \text{ MeV} \)). Similarly, the unit "MeV" is missing on the value 0.5 at the end of the first paragraph.

Top of page: the division 6.67/6.697 yields 0.996. Hence only about 0.4 percent of the neutrons .... Similarly, the value on the fourth line is 0.4%, and not 4%. 
Page 88  Equation (3.4.20): The second integral should contain $\alpha_k$ in the denominator (not $\alpha_j$).

Page 91  The word "arbitrary" at the end of the first paragraph has been misspelled.

Page 103  First line: (3.3.27) $\Rightarrow (3.3.21)$

Page 108  The integral at the top of the page is missing a "v" between dE and $\Sigma_f$.

Page 110  The integral in the denominator of Eq (3.5.12) should be $\int_{\text{fuel}}$ (not $\int_{\text{cell}}$). The argument is also slightly wrong here.

Page 118  Line above Eq. (4.2.7): $J(\mathbf{r},E) \cdot \mathbf{i} + J(\mathbf{r},E) \cdot \mathbf{i} \;\text{dE}$

Page 122  Last paragraph should read "if $N(\mathbf{r},\Omega,E)$ is not to" and not "otherwise $N(\mathbf{r},\Omega,E)$ will " and "$V_z(f,E)$ should never", and not "can" never.

Page 122  Fig. (4.4b): drawing should look like this:

```
   \mathcal{N}_1
   \mathcal{N}_2

\rightarrow \mathbf{x}
```

Page 127  4th and 3rd lines from bottom should read "...for five or more arbitrary directions of reentry generally yields..."

Page 132  The gradient of Eq. (4.7.7) has been improperly taken--terms and constants are missing (very top of page).

Page 133  4.2 (3.2.4) $\Rightarrow (3.2.5)$

Page 133  Omit the small bracket in Eq. (4.7.13) between the large bracket and $\psi_g$.

Page 137  Table 4.1: The bottom term under $R(f)$ should contain the factor $\sin(\frac{\pi z}{L_z})$ (the "z" is missing).

Page 138  Second line of 2nd paragraph should read: "by (4.7.20) is less than about 5 percent, and therefore the accuracy ...

Page 148  11th line should begin "$\psi(\mathbf{r},E)$ and $\mathbf{r} \cdot \nabla \psi(\mathbf{r},E)$ be ..." (add capital "D").

Page 154  The line after Eq. (4.10.22) should end "$C_5 \sinh C_6 \equiv + C_4$ and $C_5 \cosh C_6 \equiv - C_3$

Page 156  Equation (4.10.30) should read, $\frac{1}{\lambda} \sum_k^{\Sigma_f} \chi(x)$. (add \textsuperscript{u})
Equation (4.10.51) should read:

\[
\bar{P} = \frac{1}{(3 \times 10^9)^2 \pi R_z L_z} \int_0^\infty \int_0^{2\pi} \int_0^{L_z} \Phi(\rho, z, E) \Phi(\rho, z, E') \Phi'(\rho, z, E') \Phi'(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') d\rho \cdot d\theta \cdot dz \\
= \frac{2V}{(3 \times 10^9)^2 \pi R_z L_z} \int_0^{L_z} \int_0^{2\pi} \int_0^{L_z} \Phi(\rho, z, E) \Phi(\rho, z, E') \Phi'(\rho, z, E') \Phi'(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') \cdot \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') \Phi(\rho, z, E') d\rho \cdot d\theta \cdot dz
\]

(corrections circled).

Page 164 Change definitions of \( v_1 \) and \( v_2 \) to

\[
\frac{1}{v_1} = \frac{\int_0^\infty \phi_1(r\rho) \frac{dE}{E}}{\int_0^\infty \phi(r\rho) \frac{dE}{E}} \quad ; \quad \frac{1}{v_2} = \frac{\int_0^\infty \phi_2(r\rho) \frac{dE}{E}}{\int_0^\infty \phi(r\rho) \frac{dE}{E}}
\]

Page 164 Also Eq. 4.11.4, last line: \( \nu E_f(E') + \nu E' f(E') \)

Page 165 Eq. 4.11.6, 1st line: \( D(E) + D'(E) \)

Page 167 Eq. (4.11.11) last line

\[
\int_{x_{i-1/2}}^{x_{i+1/2}} dx \int_{y_{j-1/2}}^{y_{j+1/2}} dy \quad [\text{etc}] 
\]

Page 170 line after Eq 4.11.15: \( z = Z_1 \to z = \pm Z_1 \)

Page 170 Eq 4.11.17, 2nd line: \( X_1 \to X_1(x) \)

Page 174 5th line of text: \( C_2 + C_2(1) \)

Page 177 7th line from bottom: \( P_{L_1 f} + P_{L_2 f} \)

Page 178 Eq 4.12.16, multiply by \( \frac{\text{fuel}}{\alpha_2} \)

Page 178 line after Eq 4.12.18: \( L_2^2 + L_2 \)

Page 180 Eq 4.12.27: the (2.3) element \( s_2D_1(2)K_2X_2 + s_2D_1(2)K_2 \)

Page 181 2nd line: impossible \( \to \) unlikely

Page 182 3rd paragraph, line 6: \( (4.7.23) \to (4.7.22) \)
Page 190  Eq 4.13.2: $\psi^k(E) \rightarrow \psi^k_g(E)$ and line 4: $E_2 - E_1 \rightarrow E_1 - E_2$

Page 191  Eq 4.13.5, 2d line: $\psi^k_g(E,E') \rightarrow \psi^k_g(E')$

Page 191  Eq 4.13.6, last line: $\int \Delta E_g' \rightarrow \int \Delta E_g$

Page 191  Eq 4.13.7: $\chi^I \chi^J \Sigma^k f_g(E) \rightarrow \chi^I \chi^J \Sigma^k f_g(E)$

Page 196  Problem 16: replace $\sigma_s = 8b$, $\sigma_f = 4b$, $\sigma_a = 3.85b$ by $\sigma_s = 4b$, $\sigma_f = 1.2b$, $\sigma_a = 0.5b$

Page 202  Eq 5.2.3: $\varphi + \psi$; $k = 8.6 \times 10^{-5}$ ev/$^0K$

Page 203  Equa. 5.2.5: $\sigma_a(E,T) \rightarrow \sigma_c(E,T)$

Page 205  Eq 5.2.13: $\exp \left( \frac{1}{4s^2} (x - y)^2 \right) \rightarrow \exp \left( \frac{1}{4s^2} (x - y)^2 \right)$

Page 212  Eq 5.4.12: denominator 1st term $\sum_{G' = g+1} G (\xi_{gg} + \xi_{ag}) \phi_g \rightarrow$

Page 213  last line: notation $\rightarrow$ notion

Page 216  5th line: (5.4.21) $\rightarrow$ ... (5.4.22)

Page 221  Eq 5.5.4: $\Sigma_{gg} \equiv \int \ldots \Sigma_g(E,E' \rightarrow E) \Phi(E,E')$
Eq 5.5.3 numerator \( \bar{\varphi}(E) \rightarrow \bar{\varphi}(f) \) (E)

Immediately after Eq 5.5.7: (5.5.1) \(\rightarrow\) (5.5.6)

Eq 5.5.9: \( \Sigma_t(f)(E) \bar{\varphi}(r,E) \rightarrow \Sigma_t(f)(E) \varphi(r,E) \)

In integrand \( \varphi(r,E) + \varphi(r,E^-) \)

Eq 5.5.13: \( \varphi(r,E)H^{(m)} \rightarrow \varphi(r,E')H^{(m)} \)

Paragraph after Eq (5.5.17), 2nd line: "neutrons scattered into the energy interval of \(\mathcal{E}\) within..." \(\rightarrow\) "neutrons appearing with energy \(E\) within..."

Eq 5.5.21, 2nd line: \( \sum_s(f) \rightarrow \sum_s^i(f) \)

4th line from bottom of page: \( \varphi(r,E) \rightarrow \varphi(r,E) \)

Last paragraph, title: Probabilities \(\rightarrow\) Densities

Eq 5.5.26: \( \Sigma_{s(f)} \rightarrow \Sigma_{s(f)}^{res} \)

3rd paragraph: "interval about \(dE\)" \(\rightarrow\) "interval about \(E\)"

Eq 5.6.9, 1st line of Eq: \( d\nu_m^{(1)} \rightarrow d\nu_m^{(1)} \)

2nd line of Eq: \( d\nu_f^{(1)} \rightarrow d\nu_f^{(1)} \)

2nd line after Equa. (5.6.12): "spatially flat within ..." \(\rightarrow\) "spatially flat and isotropic within ..."

Line 8: \( n_1 \cdot \bar{\omega} dE dA(1-G_f^{(1)})/\Sigma_t(f)(E) \rightarrow \)

\( n_1 \cdot \bar{\omega} dE dA(1-G_f^{(1)})/\Sigma_t(f)(E) \)

Eq 5.6.36: \( P_m(E) \rightarrow P_m^o(E) \); last line: \( P_m(E) \rightarrow P_m^o(E) \)

Eq 5.6.37: \( P_m(E) \rightarrow P_m^o(E) \)

2nd line from bottom: "... appearing in \(dE\) ..." \(\rightarrow\) "... appearing at \(E\) ..."

Point (3), 1st line "...\(dE\) is flat within the fuel rod and flat within..." \(\rightarrow\) "...\(dE\) is flat and isotropic within the fuel rod and within..."
E_c^{-}E_f \rightarrow E_c + E_f ; \text{  2 lines after Eq 5.7.1: of a U}^{28} \text{ atoms} \rightarrow \text{ of U}^{28} \text{ atoms}

\text{Eq 5.7.16: rhs } \frac{\sigma_{a}^{28}(E)}{\sigma_{a}^{28}(E)} \rightarrow \sigma_{a}^{28}(E)

\text{Eq 5.7.20 denominator: } [\ldots]I_{t}(m) + I_{t}(m)(E)

\text{4th line from bottom: } P_{f}(E) \rightarrow P_{f}^{0}(E)

\text{Problem 4c: expected } \rightarrow \text{ expected}

\text{Fig. 6.2 } \beta^{-}1.2 \text{m; 6.7h missing } Pa^{234} \rightarrow U^{234}

\text{Eq 6.2.6, 4th Eq: } \sigma_{a}^{28} \rightarrow \sigma_{a}^{28}

\text{Paragraph beginning "For the highly enriched..." : 3rd line: } 4.7 + 1.2; \text{ 10th line: } 14 + 13; \text{ 11th line 4.7 } \rightarrow 1.2; \text{ 12th line: }

\ldots \text{conversion leads to an increase of } 0.65 \text{ percent in the U}^{25}; \ldots \rightarrow \ldots \text{conversion is equivalent to an increase of } 0.17 \text{ percent in the initial U}^{25};\ldots

\text{Paragraph (beginning "Not only ...") 3rd line: } \exp(-\sigma_{a}^{24} \phi \tau t) \rightarrow \exp(-\sigma_{a}^{24} \phi \tau \Delta t); \text{ last line: } 0.0000092 \rightarrow 0.00000088

\text{Eq 6.2.14, 6.2.15: all } \sigma_{a}^{28} \text{'s } \rightarrow \sigma_{Y}^{28}

\text{Eq 6.2.13, 2nd equation } \sigma_{Y}^{28} \rightarrow \sigma_{Y}^{28}

\text{paragraph beginning "The simplest ...": last word: } \sigma_{a}^{ff} \rightarrow \sigma_{a}^{ff}

\text{Eq 6.3.6, 1st line, last term: } \exp(\sigma_{a}^{Sm} \phi \tau t) \rightarrow \exp(-\sigma_{a}^{Sm} \phi \tau t)

\text{Eq 6.3.9: denominator } \sigma_{a} \rightarrow \sigma_{a}^{Sm}

\text{2 lines after Equa. (6.3.9): 13 years } \rightarrow \text{ 32 years}

\text{Last paragraph: 3rd line: } \text{absorption } \rightarrow \text{ absorption}

\text{2 lines after Equa. (6.3.11): samarium } \rightarrow \text{ samarium}
Last paragraph, 1st line: 10 neutrons $\rightarrow 10^3$ neutrons

Line 6: They $\rightarrow$ Then

Paragraph beginning "Since only..." 1st line: "...emitted in fission..." $\rightarrow$ "...emitted in thermal fission..."

Problem 3, last line: cross sections given $\rightarrow$ cross sections and other assumptions given...

Problem 5: add $n^2(t)$ to both $f$'s on l.h.s.; 2nd eq, last term: $n^3(t_{n+1}) \rightarrow n^2(t_{n+1})$

Problem 10a, Equa. beginning $J_2$ ... $+ \nu E_{f2} \rightarrow - \nu E_{f2}$

Problem 10a: last line: $\bar{\phi} = \frac{1}{2}(\phi_1 + \phi_2)$

Eqs 7.2.2, 7.2.3: $\int_0^\infty (...)dE$ (dE's missing)

Eq 7.2.4: $c_1(r,E) \rightarrow c_1(r,E)$; Eq 7.2.5: $\chi_p^j \rightarrow \chi_p^j(E)$

Eq 7.2.7: $\frac{d}{dt} \rightarrow \frac{\partial}{\partial t}$

Eq 7.5.12: $\exp (-0.068t) + \exp (-0.0695t)$

Eq 7.5.12: 0.0113 $\rightarrow$ -0.113

6th line from bottom: 1.5 millisecond $\rightarrow$ 15 millisecond

1st line: 1.5 millisecond $\rightarrow$ 15 millisecond

Eq 7.6.4: Denominator: $\chi F(\delta S) \rightarrow \chi F(\delta S)$

1st paragraph, 2nd line: $\Rightarrow$ If we add at some point $r$ a sample $\eta$...

10^6 - all having energy $E$ and an isotropic ... etc.

7 lines from bottom: Equation (7.6.16) $\rightarrow$ Equation (7.6.17)

1st line of paragraph below Eq 7.6.21: solution of (7.6.17) $\rightarrow$ solution of (7.6.18)

Second paragraph: "When the reactivities...and $\delta(\chi F)$ are desired,..."
Eq 7.7.2, 2nd line $s_g'(r)'s \rightarrow s_{og}'(r)'s$

Eq 7.7.1, Numerator: $- \sum_{g'=1}^{G} \phi_{g'}(r) \rightarrow + \sum_{g'=1}^{G} \phi_{g'}(r)$

$\delta \Sigma_{tgg}(r) \rightarrow \delta \Sigma_{sgg}(r,t)$

Problem 4: Assume $a_1(t)$ and $a_2(t)$ are known

Problem 7: $C_i(T) \rightarrow C_i(t)$

Paragraph 4, line 3: deriving $\rightarrow$ derive

line 14: containing $\rightarrow$ containing

last 3 lines: "all having energies E and being introduced isotropically at point $r$ in a critical ..."

line 6: ...having energies E, directions of travel $\Omega$ and all introduced into the reactor at point $r$. These neutrons ...

last line: ... if any orthogonal polynomials ...

last line Eq 8.4.13: $\psi_m(E') \rightarrow \psi_m(z,E')$

Figure 8.3: $\phi'$ measured in wrong sense

Eq 8.4.15: $\psi_m(E') \rightarrow \psi_m(z,E')$; $\Sigma_{sn}(E'\rightarrow E) \rightarrow \Sigma_{sn}(z,E'\rightarrow E)$;

$\sum_{m=0}^{\infty} [ ]$ - add brackets line 4; $\psi_n(E) \rightarrow \psi_n(zE')$

2nd line after 8.4.16: $N \rightarrow \mathbb{N} + 1$

Sentence beginning on 2nd line should be "For slab geometry this procedure...etc."
Page 361
line 1: (usually complex) $\rightarrow$ either real or pure imaginary
line 21: $\int d\Omega F_{-m}^{\pm L}(\Omega, E) \rightarrow \int d\Omega F_{+L}^{\pm L}(\Omega, E)$
line 25: $\exp(+z/L) \rightarrow \exp(+z/L)$

Page 362
4th line from bottom: $\mathcal{Y}_r^p(\Omega) \rightarrow \mathcal{Y}_r^p(\Omega)$

Page 363
1st line after 8.4.23: all $l > L \rightarrow$ all $F_l$ with $l > L$

Page 364
1st line after 8.4.24: $\Sigma'(E' + E, \mu) \rightarrow \Sigma'(E' + E, \mu)$

Page 365
Eq 8.4.27, 2nd line: $\Sigma_c(E')F_0(\frac{\Omega}{B})(E) \rightarrow \Sigma_c(E')F_0(\frac{\Omega}{B})(E')$

Page 366
Eq 8.4.33, 2nd line: $d\phi \rightarrow d\phi/2\pi$

Page 368
Equa. 8.4.35: $\sum_k^j(\Omega, E')\psi^o(x, E) + \sum_k^j(\xi, E')\psi^o(x, E')$

Page 368
Eq. 8.4.36: 1st term: $(n + 3) \rightarrow (2n + 3)$

Page 370
Eq 8.4.38, 2nd line: $... + \sum_{so}(x, y, E' + E) \frac{1}{4\pi} \int \left[ \sum_{d'=1}^4 \frac{1}{4\pi}(x, y, \Omega_{d'}, E') \right]$

Page 373
4th line: $\alpha E - E$ should be $\alpha E + E$

Paragraph 3, line 6: for small $\Delta x$ becomes $\sum_c\Delta x \exp(-\Sigma_c\Delta x) \rightarrow$
for small $\Delta x$ becomes $\sum_c\Delta x \exp(-\Sigma_c\Delta x)$

Page 375
2nd paragraph, line 5: tables of $\rho$ versus $x$ $\rightarrow$ tables of $F$
versus $x$ ;
2nd paragraph, line 6: number $\rho$ is found $\rightarrow$ number $F$ is found

Page 377
Eq 8.4.49, 2nd line $< \xi >$ being an expected value defined by $< \xi^2 >$ etc.

Page 377
2nd paragraph from bottom; last line: "error is $\pm \epsilon$ -"
"error is $\leq |\epsilon|$"
Page 382  
3rd line: for $0 \leq \mu < 1 \rightarrow$ for $0 < \mu \leq 1$

Page 382  
Prob. 10: $<\psi_n^{(\lambda)}|L^{-1}|Q> \rightarrow <\psi^{(\lambda)}|Q>$

Page 383  
Prob. 17.a. 2nd line: delete period and add "and $E_n = 0$, $n > 1$."

Page 384  
Prob. 19 lines 2 and 3 should have $x = 0$ to $x = x_1$ and ... extends from $x_1$ to $\infty$.

Page 384  
Problem 21: Hint: Problem 7 → Problem 11

Page 386  
last paragraph; line 4: from → form

Page 387  
$E_j^i(E')$ in 1st of Eq 9.2.1 and $\Psi_1(E')$ in 2nd $\rightarrow \Sigma_j^i(z, E')$ and $\Psi_1(z, E')$

Page 387  
Eq 9.2.6: $\frac{3}{3z} \left[ \frac{\partial}{\partial z} \phi(z, E) \right] \rightarrow -\frac{3}{3z} \left[ \frac{\partial}{\partial z} \phi(z, E) \right]$

Page 389  
Paragraph 9.3, 4th line: $\Sigma_s(z, E' \rightarrow E) \rightarrow \Sigma_s(z, \mu_0, E' \rightarrow E)$

Page 395  
Eq 9.3.23: $J(x, E) \rightarrow J(x, E)$

Page 395  
Eq 9.3.24: $\Sigma_c(x, E) \phi(x, E) \rightarrow \Sigma_c(x, E) \phi(x, E)$

Page 395  
last line: (9.3.23) → (9.3.24); (9.3.26) → (9.3.27)

Page 396  
last of Eq 9.4.3: $A_{\text{gg}'}, u \rightarrow A_{\text{gg}'}, u(x) ; \Sigma_c(x, E) \rightarrow \Sigma_c(x, E')$

Page 397  
last line in paragraph after (9.4.8): positive → non-negative

Page 397  
Eq 9.4.9: $\frac{\partial}{\partial u} \phi, (u) \rightarrow \frac{\partial}{\partial u} \phi, (x)$

Page 401  
Lines 5 and 6: $= 0 \rightarrow = 0$ or $\infty$

Page 403  
last paragraph, 3rd line should be "...can be approximated by integrals over \( \Delta E_g \) and $\Delta E_{g'}$ of unnormalized pieces..."

Page 403  
Eq 9.4.25: Remove $\Delta E_n$

Page 403  
Eq 9.4.26: Remove $\Delta E_n$

Page 403  
Eq 9.4.28: Remove $\Delta E_n$

Page 404  
Eq 9.4.29: $-\nabla \cdot D_g \phi \rightarrow -\nabla \cdot D_g \phi_g (x)$

Page 405  
last line: $[\vec{D}] \rightarrow [\vec{D}_u]$

Page 406  
Paragraph 4, line 2: $\delta(E' \rightarrow E) \rightarrow \delta(E' \rightarrow E)$
Item (3); 1st line: "is taken as $\sum_{s_1} \delta(E' - E)" \rightarrow "is taken as $\sum_{s_1}(E') \delta(E' - E)"

Problem 3, part c: $\delta\left(\mu \pm \frac{\pi}{4}\right) \rightarrow \delta\left(\mu \pm \cos \frac{\pi}{4}\right)$

Problem 12: r.h.s. of expression for $q_1(u)$ should be negative

Eq. 10.3.10; 3rd line; (1,1) element of the matrix:

\[
\frac{1}{4!} \kappa^2 \Delta^4 \rightarrow \frac{1}{4!} \kappa^4 \Delta^4
\]

Eq (10.3.23):

\[
\Omega = \begin{bmatrix}
\omega_1 & 0 \\
0 & \omega_2
\end{bmatrix}
\]

Eq 10.3.33: $\int_{-1}^{1} \rightarrow \int_{-1}^{1}$

Equa. (10.3.38) r.h.s. –

$\int_0^{2\pi} \frac{d \phi'}{2\pi} \int_{-1}^{1} \frac{d \mu'}{2} \int_0^{\infty} dE' \Sigma_s(E', \mu_0) \text{ etc.}$

$= \int_0^{2\pi} \frac{d \phi'}{2\pi} \int_{-1}^{1} \frac{d \mu'}{2} \Sigma_s(E, \mu_0) \psi(x_1, \mu', E)$

Line 1: one-speed \rightarrow one-group

2nd paragraph from bottom; 4th line: material \rightarrow material

In the $f$'s: $y_x \rightarrow y_j$

Last line of text: (10.3.18) \rightarrow (10.3.13)
Equation 11.2.4; 2nd line from bottom: 
\[ [V_1(E')J_1(z) + V_2(E')J_2(z)] \]
\[ \rightarrow [V_1(E)J_1(z) + V_2(E)J_2(z)] \]

Eq 11.2.10: \[ \frac{d}{dz} \begin{bmatrix} \phi_1(z) \\ \phi_2(z) \end{bmatrix} + [A(z)] \begin{bmatrix} \phi_1(z) \\ \phi_2(z) \end{bmatrix} \]

Line 18: \( U_1(E), U_2(E) \rightarrow V_1(E), V_2(E) \)

Eq 11.2.17, first line: \(-\Sigma_1 \psi_1^1 T_1 \rightarrow -\Sigma_1 \psi_1^1 T_1 \)

Eq 11.2.26: \( \frac{1}{\lambda} \int [W_j][M] \ldots \text{ etc.} \)

\[ \psi_{1,m,n}(x,y,z) = \sin \frac{\pi x}{L_x} \sin \frac{\pi y}{L_y} \sin \frac{\pi z}{L_z} \]

Eq 11.3.4, last line: denominator is \( \int \nabla \phi (\phi_0 + \delta \phi)^2 dV \)

Eq 11.3.9: \( \Sigma_a \rightarrow \Sigma \)

Eq 11.3.10, numerator: \( \int \left[ \nabla \phi \cdot \nabla \phi + \Sigma \phi^2 \right] dV \)

#5. should read: "The function \( \phi \) that makes \( F(\phi) \) stationary and takes on a minimum value with respect to first-order variation in \( F(\phi) \) is..."

Eq 11.3.13, 2nd line:
\[ + \Sigma(x) \cos \frac{\pi x}{L} \sin \frac{x}{L} \rightarrow -\Sigma(x) \cos \frac{\pi x}{L} \sin \frac{x}{L} \]

Eq 11.3.15: \( = [\ldots + [\ldots \]

Eq between 11.3.16 and 11.3.17 should be:
\[ \left\{ \begin{array}{c}
\end{array} \right\} \]

Eq 11.3.18, last line: \( [SU]^T \nabla \cdot [v^*] - \nabla \cdot ([v^*]^T [SU]) + \ldots \)
Eq 11.3.23, middle line: \[ x_N - \frac{h_{N-1}}{2} < x \leq x_N \]

Eq 11.4.5, 1st term, 2nd line: \[ \frac{d}{dx} \rightarrow \frac{\partial}{\partial x} \]

Last paragraph, 1st line \([A] + [A] \]

Eq 11.4.15:

\[ \sum_{n=1}^{N-1} \rightarrow \sum_{n=0}^{N-1} \]

Eq 11.4.17, 3rd line:

\[ \sum_{k=1}^{K} \rightarrow \sum_{k=1}^{K} \sum_{n=1}^{N-1} \]

Eq 11.4.18: \( dz \)'s missing from all integrals over \( Z \)-ranges

Eq 11.5.7: \( \nabla[\delta U^*] \rightarrow \nabla[\delta U^*]^T \)

Eq 11.5.20: 1st line \( h_k[D_{k-1}]^{-1} + h_{k-1}[D_{k-1}]^{-1} \)

First term of equation: \( u_j^0(y) + u_j^+ (y) \); also

\[ \frac{x-x_{k-1}}{h_k(x)} + \frac{(x-x_{k-1})^2}{h_{k-1}(x)} \]

Last term of Eq: \[ \left( \frac{y_{j+1} - y}{h_j(y)} \right) \rightarrow \left( \frac{y_{j+1} - y}{h_j(y)} \right)^3 \]

7 lines from bottom: \( T_i(x,y) = 0 \rightarrow T_i(x,y) \neq 0 \)

4th text line from bottom: points 15, 16, 13 \( \rightarrow \) points 15, 16, 18

Eq 11.6.1: r.h.s.

\[ \int_{V_n} [\varphi(x)] dV \rightarrow \int_{V_n} [\phi(x)] dV \]

Eq 11.6.4, last term, denominator: \( h_i \rightarrow h_i(x) \)

2nd line, paragraph after Eq. 11.6.15: group-g \( \rightarrow \) group-g'

Line 6: \( y_j - y_{j+1} + y_j + y_{j+1} \)

4th line from bottom: \([J_i^+(y)] \rightarrow [J_i^+(y)]\)

Maxwellian distribution 302 \( \rightarrow \) 202