

# Errata for Modern Mathematical Methods for Physicists and Engineers

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These are all the errors and omissions in my book, *Modern Mathematical Methods for Physicists and Engineers*, published by Cambridge University Press, reported as of 6 March 2010. Positions in the book are indicated by page and line number, where the top line of a page is number 1 and the bottom line is number  $-1$ . A running head, a page number and the lines of an equation are not considered to be lines, but all other lines are. Please report any additional errors to me. My current email address is [cy@cdcantrell.com](mailto:cy@cdcantrell.com).

This document was prepared from a  $\LaTeX$  file that I modified slightly from an errata file for the second edition of the  $\LaTeX$  manual, by Leslie Lamport.

## **page 1, equation between lines $-11$ and $-12$**

Replace

$$N = \frac{L^3}{h^3}$$

by

$$N = \left(\frac{L}{h} + 1\right)^3$$

[First reported by Michael Plante on 20 May 2006.]

## **page 17, line $-17$**

Replace “includes no unsigned integers greater than  $(128)_{10}$ ” by “includes no unsigned integers greater than  $(127)_{10}$ ”. [First reported by Michael Plante on 20 May 2006.]

## **page 23, line $-6$**

Replace  $N(2, 2, 3, 1)$  by  $N(2, 2, 2, 0)$ .

**page 28, line 6**

Replace  $(\frac{1}{4})_{10} = 1.0 \times 2^{-2}$  by  $-(\frac{1}{4})_{10} = -1.0 \times 2^{-2}$ . [First reported by Michael Plante on 20 May 2006.]

**page 39, Eq. (1.93)**

Replace  $R$  on the right-hand side by

$$\frac{R}{|E[y]|}.$$

[First reported by Michael Plante on 05 June 2006.]

**page 39, Eq. (1.94)**

Replace the right-hand side by

$$\frac{\epsilon_{\text{mach}}}{2\sqrt{3}}.$$

[First reported by Michael Plante on 05 June 2006.]

**page 39, Eq. (1.95)**

Replace the right-hand side by

$$\frac{1}{2\sqrt{3}} \frac{R}{|E[y]|} \sqrt{m} \epsilon_{\text{mach}}.$$

**page 39, line -5**

Replace  $\frac{1}{2} R \epsilon_{\text{mach}}$  by  $\frac{1}{2\sqrt{3}} (R/|E[y]|) \epsilon_{\text{mach}}$ .

**page 42, Eq. (1.113)**

Replace  $\sum_{k=1}^N$  on the right-hand side by

$$\sum_{k \neq j}.$$

[First reported by Michael Plante on 05 June 2006.]

**page 95, line 2**

Replace “Exercise 3.3.3” by “Exercise 3.3.5”.

**page 99, line -11 (first line of Exercise 3.3.4(c))**

Replace  $a$  with  $\sqrt{a}$ . [First reported by Frank Namin on 28 May 2006.]

**page 102, line 7**

Replace  $x_{i-\frac{1}{2}} := (x_i - x_{i-1})/2$  with  $x_{i-\frac{1}{2}} := (x_i + x_{i-1})/2$ . [First reported by Michael Plante on 05 June 2006.]

**page 105, Eq. (3.81)**

Replace the right-hand side with

$$s_i[f] - \frac{2}{3}q_i[f] + \dots$$

[First reported by Michael Plante on 05 June 2006.]

**page 106, line 6**

Replace “relative” with “absolute”.

**page 106, line 7**

Replace “approaches zero” with “is bounded”.

**page 106, line 10**

Replace “relative” with “absolute” and “approaches unity” with “is unbounded”.

**page 112, caption of Figure 3.8**

Replace  $y' = y$  by  $y' = -y$ . [First reported by William J. Pervin on 05 Mar 2001.]

**page 118, caption of Figure 3.11**

Replace “of absolute stability of” by “in which  $|\xi_1| \leq 1$  and  $\xi_2$  for”. [First reported by Frank Namin on 14 Jun 2006.]

**page 123, lines -4 and -3**

Replace  $(\mathbb{Q}, \cdot)$  by  $(\mathbb{Q} \setminus \{0\}, \cdot)$ ; replace  $(\mathbb{R}, \cdot)$  by  $(\mathbb{R} \setminus \{0\}, \cdot)$ ; and replace  $(\mathbb{C}, \cdot)$  by  $(\mathbb{C} \setminus \{0\}, \cdot)$ . [First reported by Aria Nosratinia on 24 Jan 2002.]

**page 207, line -14**

Replace “bra” with “ket”. [First reported by Michael Plante on 12 June 2006.]

**page 237, second line of Eq. (5.226)**

Replace  $2z'$  with  $z'$ . [First reported by Michael Plante on 12 June 2006.]

**page 243, Eq. (5.265)**

Replace  $m'$  with  $n$ . [First reported by Michael Plante on 12 June 2006.]

**page 291, line -4**

Replace  $\delta_l^l$  with  $\delta_k^l$ . [First reported by Michael Plante on 12 June 2006.]

**page 291, line -5**

Replace  $\sigma$  with  $\sigma^2$ . [First reported by Michael Plante on 12 June 2006.]

**page 295, line 7**

Replace  $\{\bar{u}_1, \dots, \bar{u}_k\}$  with  $\{\bar{v}_1, \dots, \bar{v}_k\}$ . [First reported by Michael Plante on 12 June 2006.]

**page 389, Eq. (8.125)**

Replace the left-hand side with

$$\langle \bar{x}, \bar{y} \rangle$$

**page 398, line -4**

Replace  $p(n)$  by  $p_n$ .

**page 424, line 7**

Replace  $\alpha_m$  with  $\alpha^m$ . [First reported by John Frensley on 5 July 2006.]

**page 424, line 9**

Replace “in which” by “in which, for  $a = 0$  and  $b = 1$ ,”

**page 426, Eq. (8.328)**

Replace  $e^{2\pi m(x-a)/(b-a)}$  by  $e^{2\pi im(x-a)/(b-a)}$ .

**page 483, Eq. (9.118)**

Replace

$$\Rightarrow \mathbf{A}^H(\bar{x}' + \bar{y}') - (\mathbf{A}^H \bar{x}' + \mathbf{A}^H \bar{y}') \in \{\text{domain}[\mathbf{A}]\}^\perp$$

by

$$\Rightarrow \mathbf{A}^H(\bar{x}' + \bar{y}') = (\mathbf{A}^H \bar{x}' + \mathbf{A}^H \bar{y}') \in \{\text{domain}[\mathbf{A}]\}^\perp.$$

**page 483, Eq. (9.120)**

Replace

$$\Rightarrow A^H(\alpha\bar{x}') - \alpha A^H\bar{x}' \in \{\text{domain}[A]\}^\perp$$

by

$$\Rightarrow A^H(\alpha\bar{x}') = \alpha A^H\bar{x}' \in \{\text{domain}[A]\}^\perp.$$

**page 543, Eq. (10.71)**

Replace

$$\rho(x, y) := \begin{cases} 0, & \text{if } y \neq x; \\ 1, & \text{if } y = x \end{cases}$$

by

$$\rho(x, y) := \begin{cases} 1, & \text{if } y \neq x; \\ 0, & \text{if } y = x. \end{cases}$$

[First reported by William J. Pervin on 6 May 2009.]

**page 564, line –6**

Replace “Rudins” with “Rudin”.

**page 610, line 8**

The Gibbs overshoot is 18% of the function value at the top of the step, but is 9% of the height of the step (2 in this case). [First reported by Leslie Green on 15 Sep 2001.]

**page 658, Eq. (11.233)**

Replace  $c \int_0^z s(z') dz'$  by  $\int_0^z s(z') dz'$ .

**page 658, Eq. (11.234)**

Replace  $c \int_{z-ct}^{z+ct} s(z') dz'$  by  $\int_{z-ct}^{z+ct} s(z') dz'$ .

**pages 745–763, Index**

Many entries are out by one or two pages. A corrected index has been produced and is available from the author. [First reported by Simon Capelin on 05 Mar 2001.]