

Third Revised Edition of “Engineering Optics”

With sincere appreciation to Professor Danilo Erricolo and his students of University of Illinois at Chicago

Page	Position	Errata	Corrige	Credit
27	(in eq. (2.6)	$\left(z_i \frac{(x_i - x_0)^2 + (y_i - y_0)^2}{2z_i}\right)$	$\left(z_i + \frac{(x_i - x_0)^2 + (y_i - y_0)^2}{2z_i}\right)$	Robert Stevens Ramon Acosta
32	(in eq. (2.22)	$\mathbf{k}_1'' = -\mathbf{k}_2'' = \mathbf{k}_2''$	$\mathbf{k}_1'' = -\mathbf{k}_2'' = \mathbf{k}''$	
59	(line before last	u_{SA}	u_{SA}	
63	line below eq. (3.31)	$f_v = y_i / \lambda z_i$	$f_y = y_i / \lambda z_i$	
64	eq. (3.37)	$\exp\left[\frac{jk(x_i^2 + y_i^2)}{2z_i}\right]$	$\exp\left[\frac{jk(x_i^2 + y_i^2)}{2z_i}\right]$	(All other corrections are credited to Professor Danilo Erricolo of University of Illinois at Chicago)
70	(in eq. (3.70)	$-F\left(-\sqrt{\frac{2}{\lambda z_i}}(a + X_i)\right)$	$-F\left(-\sqrt{\frac{2}{\lambda z_i}}(a + x_i)\right)$	
76	(in eq. (4.6)	$\left(\frac{e^{-j2\pi f_y x_0} - e^{+j2\pi f_y x_0}}{-j2\pi f_y}\right)$	$\left(\frac{e^{-j2\pi f_y x_0} - e^{+j2\pi f_y x_0}}{-j2\pi f_y}\right)$	
76	(in eq. (4.6)	$\frac{j}{2\pi f_y} \int_0^a (e^{-j2\pi(f_x + f_y)x_0} - e^{-j2\pi(f_x - f_y)x_0}) dx_0$	$\frac{j}{2\pi f_y} \int_0^a (e^{-j2\pi(f_x + f_y)x_0} - e^{-j2\pi(f_x - f_y)x_0}) dx_0$	
92	equation before eq. (4.41)	missing =	add = between the two lines	Zacharias Borst
94	line 4	$p_n = -p, -p/3, -p/5, \dots, p/n, 0, p/n \dots p/5, p/3, p$	$p_n = -p, -p/3, -p/5, \dots, p/n, 0, p/n \dots p/5, p/3, p$	
94	last line of eq. (4.48)	$\exp\left[jk \frac{x_i^2}{2 \frac{(n-1)}{n} p}\right)$	$\exp\left(jk \frac{x_i^2}{2 \frac{(n-1)}{n} p}\right)$	
103	eq. (5.5)	$\hat{\mathbf{s}} = \hat{\mathbf{r}} \frac{dr}{ds} + \mathbf{r} \frac{d\hat{\mathbf{r}}}{ds} + \hat{\mathbf{k}} \frac{dz}{ds}$	$\hat{\mathbf{s}} = \hat{\mathbf{r}} \frac{dr}{ds} + r \frac{d\hat{\mathbf{r}}}{ds} + \hat{\mathbf{k}} \frac{dz}{ds}$	
106	Fig. 5.4	$L(x, y, z) = x^2 + y^2 + z^2 = \left(\frac{Q}{2}\right)$	$L(x, y, z) = x^2 + y^2 + z^2 = \left(\frac{Q}{2}\right)$	Sean Fitzgerald
108	line before eq. (5.28)	??	(5.27)	
109	in eq. (5.32)	normal to	normal to	
111	in eq. (5.43)	$\sqrt{n^2(x) - (b^2 - c^2)}$	$\sqrt{n^2(x) - (b^2 + c^2)}$	
112	third line after eq.(5.50)	this plane	the plane given by (5.50)	Zacharias Borst
115	line 1	on the x -axis	at $x = 0$	
115	first eq. after (5.64)	ds	dx	
115	second eq. after (5.64)	$\sin^{-1}\left(\frac{\alpha}{\cos \theta_0}\right)x$	$\sin^{-1}\left[\left(\frac{\alpha}{\cos \theta_0}\right)x\right]$	
115	in eq. (5.65)	$\sin\left(\frac{\alpha}{\cos \gamma_0}\right)z$	$\sin\left[\left(\frac{\alpha}{\cos \gamma_0}\right)z\right]$	Zacharias Borst
118	eq. (5.71)	$ \nabla L ^2 \left(\frac{\partial L}{\partial r}\right)^2 + \left(\frac{1}{r} \frac{\partial L}{\partial \theta}\right)^2 = [n(r)]^2$	$ \nabla L ^2 = \left(\frac{\partial L}{\partial r}\right)^2 + \left(\frac{1}{r} \frac{\partial L}{\partial \theta}\right)^2 = [n(r)]^2$	
118	eq. (5.76)	$R(r) = \pm \int_{m_1}^r \sqrt{[n(r)]^2 - \left(\frac{a}{r}\right)^2} dr + m_2$	$R(r) = \pm \int_{m_1}^r \sqrt{[n(r)]^2 - \left(\frac{a}{r}\right)^2} dr + m_2$	
119	eq. (5.77)	$L(r, \theta) = a\theta + \int_m^r \sqrt{[n(r)]^2 - \left(\frac{a}{r}\right)^2} dr$	$L(r, \theta) = a\theta + \int_m^r \sqrt{[n(r)]^2 - \left(\frac{a}{r}\right)^2} dr$	
119	eq. (5.79)	$\frac{d\mathbf{r}}{ds} = \hat{\mathbf{r}} \frac{dr}{ds} + \theta \mathbf{r} \frac{d\theta}{ds}$	$\frac{d\mathbf{R}}{ds} = \hat{\mathbf{r}} \frac{dr}{ds} + \theta \mathbf{r} \frac{d\theta}{ds}$	Sean Fitzgerald
123	eq. (5.102)	$L(r, \phi, z) = \int_m^r \sqrt{[n(r)]^2 - \frac{c^2}{r^2} - a^2} dr + c\phi + az$	$L(r, \phi, z) = \int_m^r \sqrt{[n(r)]^2 - \frac{c^2}{r^2} - a^2} dr + c\phi + az$	
124	Fig. 5.13	not clear what “ δ ” is	redraw Fig. 5.13. Use Fig. 5.23 for now.	
135	second line after (5.152)	(Problem 5.8)	(Problem 5.9)	
145	line before section 6.3.3	$\exp[jk(x_i^2 + y_i^2)/2f]$	$\exp[jk(x_i^2 + y_i^2)/2f]$	

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150	in eq. (6.22)	$E(x_i, y_i \cdot d_2)$	$E(x_i, y_i, d_2)$	Sean Fitzgerald
150	in eq. (6.22)	$f_v = y_i / \lambda d_2$	$f_y = y_i / \lambda d_2$	
151	in eq. (6.24)	$E(x_i, y_i \cdot d_2)$	$E(x_i, y_i, d_2)$	
154	in eq. (6.33)	$\exp \left[jk \left(d_1 + \frac{x_2^2 + y^2}{2d_1} \right) \right]$	$\exp \left[jk \left(d_1 + \frac{x^2 + y^2}{2d_1} \right) \right]$	Sean Fitzgerald
155	in eq. (6.36)	$f_v = y_i / \lambda d_2$	$f_y = y_i / \lambda d_2$	
156	in eq. (6.37)	$f_v = y_i / \lambda d_2$	$f_y = y_i / \lambda d_2$	
156	in eq. (6.38)	$\times \left\{ \left[g \left(-\frac{x_i}{M}, -\frac{y_i}{M} \right) \exp \left(jk \frac{(x_i^2 + y_i^2)}{2M d_2} \right) \right] * \overline{P} \left[\frac{x_i}{\lambda d_2}, \frac{y_i}{\lambda d_2} \right] \right\}$	$\times \left\{ \left[g \left(-\frac{x_i}{M}, -\frac{y_i}{M} \right) \exp \left(jk \frac{x_i^2 + y_i^2}{2M d_2} \right) \right] * \overline{P} \left(\frac{x_i}{\lambda d_2}, \frac{y_i}{\lambda d_2} \right) \right\}$	Sean Fitzgerald
164	expression 2 lines above eq. (7.9)	$G_3 = (g_0 - g_4) + W^3(g_1 + g_5) + W^6(g_2 + g_6) + W^6(g_3 + g_7)$	$G_3 = (g_0 - g_4) + W^3(g_1 - g_5) + W^6(g_2 - g_6) + W^9(g_3 - g_7)$	Sean Fitzgerald
186	in eq. (8.12)	$-\beta R_0 R_0$	$-\beta P_0 R_0$	Sean Fitzgerald
238	2nd paragraph	$\Delta t = l/c$	$\Delta t = 2l/c$ (or change l to $l/2$ in Fig. 10.3,b)	
239	2 lines below (10.15)	a arbitrary	an arbitrary	
243	1st equation	$\prod \left(\frac{\lambda d_2 x}{D} \right)$	$\prod \left(\frac{\lambda d_2 x}{D} \right)$	Sean Fitzgerald
246	eq. (10.36)	$m = \frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$	$m = \frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$	
247	in eq. (10.40)	$\int_{-\mu}^{\infty} h(x) ^2 e^{j2\pi f x} dx$	$\int_{-\infty}^{\infty} h(x) ^2 e^{j2\pi f x} dx$	
254	in eq. (11.6)	$g_1(x \cos \alpha, y) e^{-jkx \sin \alpha} + g_2^*(x, y)$	$g_1(x \cos \alpha, y) e^{-jkx \sin \alpha} g_2^*(x, y)$	Sean Fitzgerald
255	in eq. (11.9)	$A \left(-\frac{f_1}{f_2} \right)$	$A \left(-\frac{f_1}{f_2} x \right)$	
261	eq. (11.16)	$H(f_x) = e^{-j2\pi f_x a} + e^{-j2\pi f_x a} = 2 \cos 2\pi f_x a$	$H(f_x) = e^{-j2\pi f_x a} + e^{j2\pi f_x a} = 2 \cos 2\pi f_x a$	
302	in eq. (11.72)	odd n even n	odd n even n	Sean Fitzgerald
377	in Table 14.2	element (2,2) of the 3m matrix $-r_{22}$	r_{22}	

Engineering Optics

Iizuka, K.

2008, XX, 532 p. 433 illus., 24 illus. in color., Hardcover

ISBN: 978-0-387-75723-0