Errata

Introduction to Modern Digital Holography with MATLAB
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For those who find any errors in the book, please e-mail Poon (tcpoon@vt.edu) so that changes can be made in future editions of the book. Thanks in advance.

Chapter 1

p.1, last line: "Using Eqs. (1.3)-(1.6), we can" should read "Using Eqs. (1.1)-(1.6), we can"
p.3, under eq. (1.12): "$\boldsymbol{j}$" replaced by "j" (not bold) for uniformity of notation.
p.3, under Eq.(1.15), "…wave equation in Eq.(11b)…" should read "…wave equation in Eq.(11)…"
p.4, under Eq.(1.16), "$R\left(\frac{\partial^2\psi}{\partial R^2}+\frac{2}{R}\frac{\partial\psi}{\partial R}\right)=\frac{\partial^2(R\psi)}{\partial t^2}$" should read "$R\left(\frac{\partial^2\psi}{\partial R^2}+\frac{2}{R}\frac{\partial\psi}{\partial R}\right)=\frac{\partial^2(R\psi)}{\partial R^2}$".
p.6, two lines under Eq.(1.22b), "$F(x_x,k_y)$" should read "$F(k_x,k_y)$".
p.6, two lines under Eq.(1.24), "…second ordinary different equation…" should read "…second ordinary differential equation…".
p.7, Table 1.1,

item #5: " $f_1 * \quad {}_2$ " $should\ read$ " $f_1 * f_2$"

item #7 :

$\frac{\pi}{\alpha}\exp[-\frac{(k_x^2+k_x^2)}{4\alpha}]$ should read $\frac{\pi}{\alpha}\exp[-\frac{(k_x^2+k_y^2)}{4\alpha}]$

item #8 :

$$\iint_{\infty}^{-\infty} 1\exp(\pm jk_x x \pm jk_y y)\,dk_x dk_y \;\; should\ read \;\; \iint_{-\infty}^{\infty} 1\exp(\pm jk_x x \pm jk_y y)\,dk_x dk_y$$

p. 8, Eq. (1.27):

$$\frac{1}{4\pi^2}\iint_{\infty}^{-\infty}\Psi_{\mathrm{p0}}(k_x,k_y)\exp\left[-jk_0\sqrt{(1-k_x^2/k_0^2-k_y^2/k_0^2)}\,z\right]\exp(-jk_x x-jk_y y)\,dk_x dk_y.$$

should read

$$\frac{1}{4\pi^2}\iint_{-\infty}^{\infty}\Psi_{\mathrm{p0}}(k_x,k_y)\exp\left[-jk_0\sqrt{(1-k_x^2/k_0^2-k_y^2/k_0^2)}\,z\right]\exp(-jk_x x-jk_y y)\,dk_x dk_y.$$

p.8, the sentence under Eq.(1.28), "$\mathrm{\psi}_{\mathrm{p0}}(x,y)$" should read "$\psi_{p0}(x,y)$"(italic).
p.8, the sentence under Eq.(1.29), "The field distribution at $z=0$ or the plane-wave component is given by $\exp(-jk_{0x}x-jk_{0y}y)$." should read. "The field distribution at $z=0$ or the plane-wave component with amplitude A is given by A $\exp(-jk_{0_x}x-jk_{0y}y)$."

p.9, Eq. (1.30):

$$\iint_{\infty}^{-\infty}\Psi_{\mathrm{p0}}(k_x,k_y)\exp(-jk_x x-jk_y y-jk_z z)\,dk_x dk_y$$

should read

$$\iint_{-\infty}^{\infty} \Psi_{\mathrm{p0}}(k_x, k_y) \exp(-jk_x x - jk_y y - jk_z z)\, dk_x dk_y$$

p.9, the equation under Eq.(1.31)

$$\psi_p(x, y; z) =$$

$$\frac{1}{4\pi^2} \iint_{-\infty}^{\infty} \Psi_{\mathrm{p0}}(k_x, k_y) \exp[-jk_0 z + j\,(k_x^2 + k_x^2) z/2k_0] \exp(-jk_x x - jk_y y)\, dk_x dk_y,$$

should read

$$\psi_p(x, y; z) =$$

$$\frac{1}{4\pi^2} \iint_{-\infty}^{\infty} \Psi_{\mathrm{p0}}(k_x, k_y) \exp\left[-jk_0 z + j\,(k_x^2 + k_y^2) z/2k_0\right] \exp(-jk_x x - jk_y y)\, dk_x dk_y,$$

p.10, Eq. (1.35):

$$\iint_{\infty}^{-\infty} \psi_{p0}(x', y') \exp\left\{\frac{-jk_0}{2z}[(x - x')^2 + (y - y')^2]\right\} dx'dy'$$

should read

$$\iint_{-\infty}^{\infty} \psi_{p0}(x', y') \exp\left\{\frac{-jk_0}{2z}[(x - x')^2 + (y - y')^2]\right\} dx'dy'$$

p.10, second line from the bottom: $\frac{ik_0}{2\pi z}$ should read $\frac{jk_0}{2\pi z}$

p. 12, under Eq. (1.39) : " Equation (1.39) is therefore called the *Fraunhofer approximation* or …" should read " Equation (1.39) describes the *Fraunhofer approximation* or …"

p.14, above Eq.(1.43): "Eq.(1.37)" should read "Eq.(1.42)"
p.15, third line down from top: $t(x, y)^* \, h(x, y; f)$ should read $t(x, y) * h(x, y; f)$ twice, for clarity

p.16. first line : " According Eq. (1.45) again " should read " According to Eq. (1.45) again"

p.16, second line below Equation (1.47): " the image plane has been flipped and inverted on the image plane." Should read "the image plane has been flipped and inverted."

p.17, on the first equation:

$$4\pi\delta\left(\frac{k_0 x}{f}, \frac{k_0 y}{f}\right) = 4\pi \left(\frac{f}{k_0}\right)^2 \delta(x, y)$$

should read

$$4\pi^2\delta\left(\frac{k_0 x}{f}, \frac{k_0 y}{f}\right) = 4\pi^2 \left(\frac{f}{k_0}\right)^2 \delta(x, y)$$

p.21, caption of Fig 1.10: “The full dimension along the horizontal axis contains 256 pixels for figures (b) to (h), “ should read “The full dimension along the horizontal axis contains 256 pixels for figures (b) to (g),”

p.22, caption of Fig 1.11: “The full dimension along x contains 256 pixels for figures b) to h).” should read “The full dimension along x contains 256 pixels for figures b) to g), while figures (e) and (h) zoom in the peak with 30 pixels plotted.”

p.24, on Problem 1.1: “Maxwell equation” should read “Maxwell’s equation”
p.25, on Problem 1.8: “Repeat P7” should read “ Repeat Problem 1.7”

p25, on Problem 1.10: “Repeat P9 but with the pupil function given by the transparency in P8.” should read “Repeat Problem 1.9 but with the pupil function given by the transparency in Problem 1.8.”

p.25, on Problem 1.12: “ P11” should read “Problem 1.11”

p.25, on Problem 1.13 : “ P11” should read “ Problem 1.11”

Chapter 2

p.31, Two lines below Eq. (2.6): “$\psi_{rec}\ A* h$” should read “$\psi_{rec} A * h$”

p.31, Eq.(2.8)

$$\begin{aligned}\psi_{rec} a \frac{jk_0}{2\pi z_0}\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right] * h(x,y;z) \\ \propto \frac{-jk_0}{2\pi z_0}\frac{-jk_0}{2\pi z}\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right] * \exp\left[\frac{-jk_0}{2z}(x^2+y^2)\right] \\ = \frac{-jk_0}{2\pi z_0}\frac{-jk_0}{2\pi z}\exp\left[\frac{-jk_0}{2(z_0+z)}(x^2+y^2)\right],\end{aligned}$$

should read

$$\begin{aligned}\psi_{rec} a \frac{jk_0}{2\pi z_0}\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right] * h(x,y;z) \\ \propto \frac{jk_0}{2\pi z_0}\frac{jk_0}{2\pi z}\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right] * \exp\left[\frac{-jk_0}{2z}(x^2+y^2)\right] \\ = \frac{jk_0}{2\pi z_0}\frac{jk_0}{2\pi z}\exp\left[\frac{-jk_0}{2(z_0+z)}(x^2+y^2)\right],\end{aligned}$$

p.35, Fig.2.6 is revised as below.

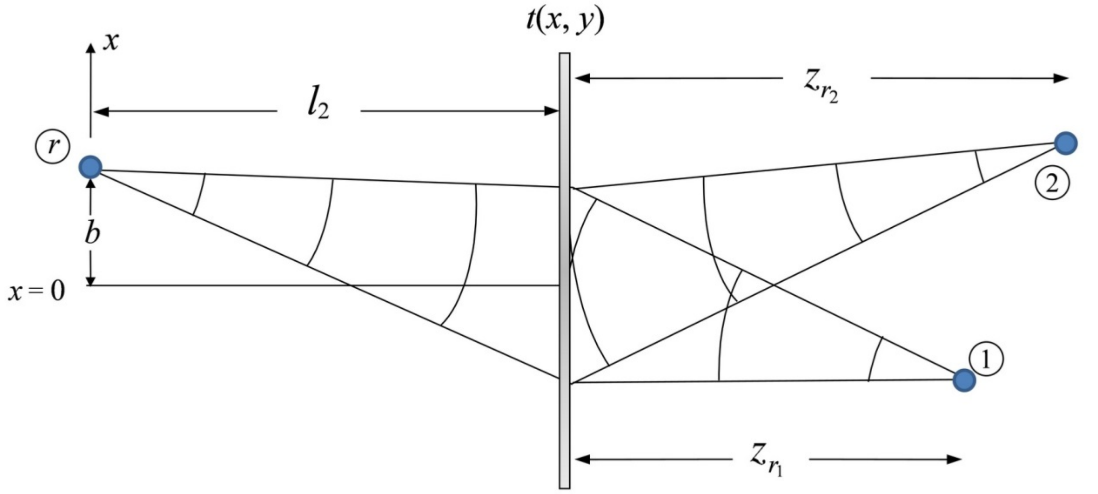

Fig.2.6

p.38, above Eq.(2.28), "…lateral separation between the objects, h…" should read "…lateral separation between the objects points, h…".

p.39, 6th line of section 2.3.2, "…and inspecting their image reconstitution locations." should read "…and inspecting their image reconstruction locations.".
p.40, two lines below Eq.(2.34), "$l_1 = 1/4R < R$" should read "$l_1 = R/4 < R$".
p.41, first equation,

$$\psi_{pr}(x,y) \propto \exp\left[\frac{-jk_r}{2l_1}(x-a)^2 + y^2)\right],$$

should read

$$\psi_{pr}(x,y) \propto \exp\left[\frac{-jk_r}{2l_2}(x-b)^2 + y^2)\right],$$

p.44, below Eq.(2.45), "where $\{\cdot\}$ stands for the operation" should read "where $\arg\{\cdot\}$ stands for the operation".
p. 45, all symbols λ by λ_0 throughout the chapter.
p.46, above Eq.(2.50), "l_c" should read "ℓ_c".
p.48, two lines above Eq.(2.56), "$B(t)$ =$A_0(\omega)$ e $^{j(\omega t+\tau)}$" should read "$B(t)$ =$A_0(\omega)$ e $^{j\omega(t+\tau)}$".
p.48, Eq.(2.56),

$$I(\tau) = \langle\left|A_0(\omega)\mathrm{e}^{\,j\omega t} + A_0(\omega)\mathrm{e}^{\,j(\omega t+\tau)}\right|^2\rangle = 2|A_0(\omega)|^2[1+\cos(\omega\tau)].$$

should read

$$I(\tau) = \langle\left|A_0(\omega)\mathrm{e}^{\,j\omega t} + A_0(\omega)\mathrm{e}^{\,j\omega(t+\tau)}\right|^2\rangle = 2|A_0(\omega)|^2[1+\cos(\omega\tau)].$$

p.49, on Eq. (2.63):

$$\mathcal{P}_N(\omega) \propto \mathcal{F}_\tau\{\gamma(\tau)\} = \mathcal{F}_\tau\left\{\Lambda\left(\frac{\tau}{\tau_0}\right)\mathrm{e}^{j\omega_0\tau}\right\} = \tau_0^2\mathrm{sinc}^2\left[\frac{(\omega-\omega_0)\tau_0}{2\pi}\right],$$

should read

$$\mathcal{P}_N(\omega) \propto \mathcal{F}_\tau\{\gamma(\tau)\} = \mathcal{F}_\tau\left\{\Lambda\left(\frac{\tau}{\tau_0}\right)\mathrm{e}^{j\omega_0\tau}\right\} = \tau_0\mathrm{sinc}^2\left[\frac{(\omega-\omega_0)\tau_0}{2\pi}\right],$$

p.50, two lines below Eq. (2.69):

$l_c^{\sim}\ 1\mu m$ should read $\ell_c{\sim}1\ \mu m$

p.52, line 9, "$E_{1A}^*(t)E_{2B}(t) = 0$, $E_{2A}^*(t)E_{1B}(t) = 0$" should read "$\langle E_{1A}^*(t)E_{2B}(t)\rangle = 0$, $\langle E_{2A}^*(t)E_{1B}(t)\rangle = 0$".

p.52, below Eq.(2.74), "depends on the complex degree of coherence of the two source" should read "depends on the complex degree of self coherence of the two source".

p.53, below Eq.(2.76), "$\tau_1 \approx \tau_2 \gg (\tau_1 - \tau_2)$" should read "$\tau_1 \approx \tau_2 \gg |\tau_1 - \tau_2|$".

p.53, Eq.(2.78), $(\tau_1 - \tau_2)$" should read "$|\tau_1 - \tau_2|$".

p.54, two lines above Eq.(2.80), "(x', y')" should read "(x, y)".

p.54, two lines below Eq.(2.80), "(xb, yb)" should read "(x_b, y_b)".

p.55, 6th line of Example 2.3, "$r = 20\ cm$" should read "$d = 20\ cm$".

p.55, below Eq.(2.82), "$(k_r = k_0/r)\sqrt{(x_a - x_b)^2 + (y_a - y_b)^2}$" should read "$k_r = (k_0/d)\sqrt{(x_a - x_b)^2 + (y_a - y_b)^2}$".

p.57, Problem 2.2,

$$M_{Lat}^v = \left[1 - \frac{R}{l_1} + \frac{R}{l_2}\right]^{-1}$$

should read

$$M_{Lat}^v = \frac{(l_1 l_2)}{(l_1 l_2 + R l_1 - R l_2)}$$

P.57, Problem 2.8,

$$|\gamma_{AB}|^2 = \frac{1}{2}\Lambda\left(\frac{\tau_1}{\tau_0}\right)\mathrm{e}^{j\omega\tau_1} + \frac{1}{2}\Lambda\left(\frac{\tau_2}{\tau_0}\right)\mathrm{e}^{j\omega\tau_2} \approx \frac{1}{2}[1 + \cos\ \omega(\tau_1 - \tau_2)]\Lambda(\frac{\tau_1}{\tau_0})\Lambda(\frac{\tau_2}{\tau_0})\ \text{ if }\ \tau_1 \approx \tau_2 \gg (\tau_1 - \tau_2).$$

Should read

$$|\gamma_{AB}|^2 \approx \frac{1}{2}[1 + \cos\ \omega(\tau_1 - \tau_2)]\Lambda(\frac{\tau_1}{\tau_0})\Lambda(\frac{\tau_2}{\tau_0})\ \text{ if }\ \tau_1 \approx \tau_2 \gg |\tau_1 - \tau_2|.$$

p.58, Problem 2.9, "$S(x,y)$" should read "$S(x',y')$".

Chapter 3

p.61, line 8, "…usual diffusively reflecting objects" should read "…usual diffusely reflecting objects".
p. 61, all symbols λ by λ_0 throughout the chapter.
p.63, caption of Fig.3.4, "…the spectrum of the zeroth-order beam is…" should read "…the spectrum of the virtual image is…"
p.64, below Eq.(3.8),

$$f_{resolvable} = \frac{sin31.4°.}{632.8\ mm} + \frac{3448\ rad/mm}{2\pi}$$

should read

$$f_{resolvable} = \frac{sin31.4°.}{0.6328\ \mu m} + \frac{3448\ rad/mm}{2\pi}$$

p.65, Eq.(3.10)

$$t(x,y) \times \psi_r e^{jk_0 sin\theta x} = [|\psi_i|^2 + |\psi_r|^2]e^{jk_0 sin\theta x} + \psi_i(x,y)\psi_r^* + \psi_i^*(x,y)\psi_r e^{j2k_0 sin\theta x}.$$

should read

$$t(x,y) \times \psi_r e^{jk_0 sin\theta x} = [|\psi_i|^2 + |\psi_r|^2]\psi_r e^{jk_0 sin\theta x} + \psi_i(x,y)|\psi_r|^2 + \psi_i^*(x,y)\psi_r^2 e^{j2k_0 sin\theta x}.$$

p.69, Eq.(1.13a)

$$\ldots = \frac{f^4}{k_0^4}\sigma_0(-x,-y) \otimes \sigma_0(-x,-y) + |A|^2\delta(x,y),$$

should read

$$\ldots = \frac{f^4}{k_0^4}\sigma_0(-x,-y) \otimes \sigma_0(-x,-y) + \frac{4\pi^2 f^2}{k_0^2}|A|^2\delta(x,y)$$

p. 72, Eq. (3.15), the last line of Eq. (3.15):

$$\mathcal{F}\left\{\sigma_0(x,y)\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right]\right\}_{k_x=\frac{k_0 x}{z_0}, k_y=\frac{k_0 y^*}{z_0}}$$

should read

$$\mathcal{F}\left\{\sigma_0(x,y)\exp\left[\frac{-jk_0}{2z_0}(x^2+y^2)\right]\right\}^*_{k_x=\frac{k_0 x}{z_0}, k_y=\frac{k_0 y}{z_0}}$$

Note to editor : two errors here. Please use the same font size for k_x and k_y ; preferably use the same font size as k_y (The same error in Eq.3.16).

p.73, line 7 of section 3.5 rainbow hologram, "[See Problem 3.2]" should read "[See Problem 3.1]".
p. 75, 7th line below figure 3.11's caption: "[Fig. 11 (a-c)]" should read "[Fig. 3.11 (a-c)]"

p. 78, Reference 4: "V.M. B. Jr." should read " V.M. Bove Jr."

p. 78, Reference 5: " D. Garbor" should read " D. Gabor"

Chapter 4

On this Chapter, replace all symbols λ by λ_0 throughout.

On p. 81, third line below Eq. (4.3): “second” should read “ length”

On p.83, second line from top: “by $k_m\Delta_x = \frac{2\pi}{N}m$” should read “as $k_m\Delta_x = \frac{2\pi}{N}m$”
On p. 83,6th line from top: “As a result, the bandwidth of ” should read “ As a result, twice the bandwidth of ”

On p. 83, 7th line down from Eq. (4.7): “limited to $f_B = B/2\pi \leq f_s = 2f_{NQ}$ for a given sampling frequency f_s.” should read “limited to $f_B = B/4\pi \leq f_s$ and the sampling frequency $f_s \geq 2f_B$.”

On p. 84, 5th and 6th line from the top of the page: “k_x” should read “k_m”

On p. 84, 3rd line from bottom: “0.5 cycle/mm” should read : “0.1 cycle/mm”

On p. 94, second line : “f_{NQ}” should read “$f_{NQ} = 1/2\Delta_{x_{CCD}}$”

On p. 97, Fig4.11, the label of horizontal axis is “k_x”

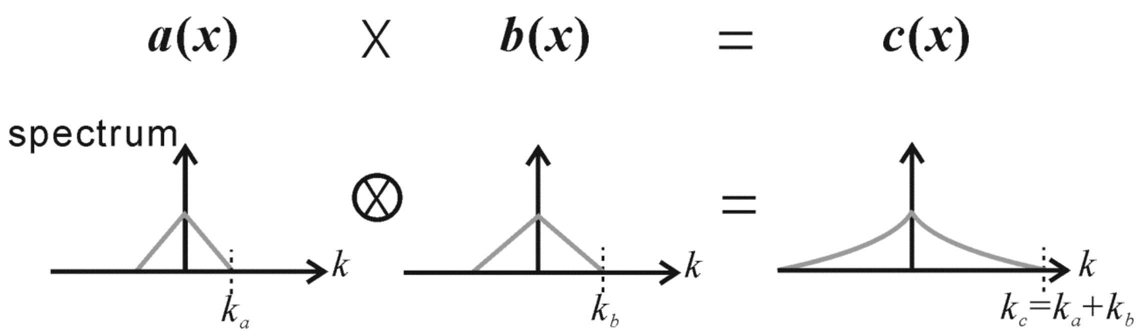

Fig.4.11

On p. 97 , 9th line from top: “$k_a < 2\pi f_{NQ,a}$ and $k_b < 2\pi f_{NQ,b}$” should read “ $k_a = 2\pi f_{NQ,a}$ and $k_b = 2\pi f_{NQ,b}$”

On p. 97, 12th line from top: “$k_c < 2\pi f_{NQ,c}$” should read “ $k_c = 2\pi f_{NQ,c}$”

On p. 98, on the whole page: “$F_1(k)$” should read “$F_1(k_x)$” in three locations, and “$F_2(k)$” should read “$F_2(k_x)$”

On p.99, Eq. (4.24):

$$\frac{1}{2\pi}\frac{d}{dk_r}\left[-jk_0 z\sqrt{1-\frac{k_r^2}{k_0^2}}\right] = \frac{zk_r}{k_0\sqrt{1-\frac{k_r^2}{k_0^2}}}$$

should be

$$\frac{d}{dk_r}\left[-k_0 z\sqrt{1-\frac{k_r^2}{k_0^2}}\right]=\frac{1}{2\pi}\frac{zk_r}{k_0\sqrt{1-\frac{k_r^2}{k_0^2}}}$$

On p.99, just below Eq. (4.25):

"where$\Delta_{kx}= 4\pi/M\Delta_x$." should read " where$\Delta_{kx}= 2\pi/M\Delta_x$."

On p.100, the sentence "…we first replace (x, y) by $(m\Delta_x, n\Delta_y)$ to get $Q_1[m, n]$. We then replace (x, y) by $(p\Delta_x^d, q\Delta_y^d)$ to get…"

should read

"…we first replace (x, y) inside the transform by $(m\Delta_x, n\Delta_y)$ to get $Q_1[m, n]$. We then replace (x, y) outside the transform by $(p\Delta_x^d, q\Delta_y^d)$ to get…".

On p. 101, three lines before Eq. (4.33a): "$= (M/2) \times \Delta_x$" should read: "$x = (M/2) \times \Delta_x$"

On p. 106, just above Eq. (4.40a): "[see Eq. (4.5)]" should read " [see Eq. (4.7)]"

On p. 116, Eq. (4.41): "$z \geq$" should read "$z_{min} \geq$"

Chapter 5

On this Chapter, replace all symbols λ by λ_0 throughout.

On p.120, second line: "the complex amplitude of the object light is given by" should read "the complex amplitude of the object light at the hologram plane is given by"

On p. 122, Section 5.1.4, second line: "the complex object field can be reconstructed" should read "the complex object field can be recorded"

On p. 123, Eq. (5.13b):

$$I_2 = |\psi_0|^2 + |\psi_r|^2 + \psi_0\psi_r^*\exp(-j\delta) + \psi_0^*\psi_r\exp(j\delta)$$

should read

$$I_2 = |\psi_0|^2 + |\psi_r|^2 + \psi_0\psi_r^*\exp(j\delta) + \psi_0^*\psi_r\exp(-j\delta)$$

On p. 123, Eq. (5.14b):

$$\psi_o\psi_r^*\exp(-j\delta) + \psi_o^*\psi_r\exp(j\delta) = I_2 - |\psi_o|^2 - |\psi_r|^2$$

should read

$$\psi_o\psi_r^*\exp(j\delta) + \psi_o^*\psi_r\exp(-j\delta) = I_2 - |\psi_o|^2 - |\psi_r|^2$$

On p.123, second line from Eq. (5.14b): $(j\delta)$ should read $(-j\delta)$

On p.123, Eq. (5.15):

$$2\psi_0\psi_r^*\sin(\delta) = (I_1 - |\psi_0|^2 - |\psi_r|^2)\exp(j\delta) - (I_2 - |\psi_0|^2 - |\psi_r|^2)$$

should read

$$-2j\psi_0\psi_r^*\sin(\delta) = (I_1 - |\psi_0|^2 - |\psi_r|^2)\exp(-j\delta) - (I_2 - |\psi_0|^2 - |\psi_r|^2)$$

On p.123, Eq. (5.16):

$$\psi_0 = \frac{(I_1 - |\psi_0|^2 - |\psi_r|^2)\exp(j\delta) - (I_2 - |\psi_0|^2 - |\psi_r|^2)}{2\psi_r^*\sin(\delta)}$$

should read

$$\psi_0 = \frac{(I_1 - |\psi_0|^2 - |\psi_r|^2)\exp(-j\delta) - (I_2 - |\psi_0|^2 - |\psi_r|^2)}{-2j\psi_r^*\sin(\delta)}$$

On p. 126, 4th line:"to be 0, 0.4π, 0.8π , and 1.2π." should read "to be 0, 0.25π, 0.5π , and 0.75π."

Onp.126, last line: " Figure 5.7(a) shows $(z) - 2I_0$" should read " Figure 5.7(a) shows $I(\tau) - 2I_0$"

On p. 128,first line after figure caption: $I(\mathrm{z})$ should read $I(\tau)$

On p.131, a line above Eq. (5.22): "which corresponds to phase shifts of $(k-1)\pi/4$" should read "which corresponds to phase shifts of $(k-1)\pi/2$"

On p. 131, Eq. (5.22):

$$k_0 2(l_0 - l_{R_k}) = (k-1)\pi/4$$

should read

$$k_0 2(l_0 - l_{R_k}) = (k-1)\pi/2$$

On p.131, a line above Eq. (5.23): "and Eq. (5.20) can be re-written to become" should read "and Eq. (5.21) can be re-written to become".

On p.131, a line below Eq. (5.23): "together with the function form of" should read "together with the functional form of"

On p. 131, Eq. (5.24):

$$I_{(k-1)\pi/2} \propto |E_0|^2 + |E_R|^2 + 2|E_0||E_R|\left|\mathrm{sinc}\left[(k-1)\frac{\Delta\lambda}{4\lambda}\right]\right|\cos[\phi_0 + (k-1)\pi/4].$$

should read

$$I_{(k-1)\pi/2} \propto |E_0|^2 + |E_R|^2 + 2|E_0||E_R|\left|\mathrm{sinc}\left[(k-1)\frac{\Delta\lambda}{4\lambda_0}\right]\right|\cos[\phi_0 + (k-1)\pi/2].$$

On p. 133, a line above Eq. (5.27): "in inhomogeneous media characterized by " should read "in an inhomogeneous medium characterized by

On p134, second line below Eq. (5.31): "Green function. The Green function, …" should read " Green's function. The Green's function,…"

p.134, Eq. (5.35):

$$\psi^s(\mathbf{R}) \ll \psi_p(\mathbf{R}).$$

should read

$$\psi^s(\mathbf{R}) \ll \psi^i(\mathbf{R}).$$

On p. 135, first line: "The Green function is a …" should read "The Green's function is a …"

On p. 135, first line below Eq. (5.37) : $k_x^2 + k_y^2 + k_z^2 < k_0^2$ shoud read $k_x^2 + k_y^2 < k_0^2$

On p. 140, 7th line above Eq. (5.47):
"Assume that the center of the object is moved from $(x, y) = (0,0)$"
should read
"Assume that the center of $S(x, y; z)$ is moved from $(x, y) = (0,0)$"

On p. 140, 4th line above Eq. (5.47): $S(x, y; z)T(x - x', y - y'; z)$
should read $T(x, y; z)S(x - x', y - y'; z)$

On p. 140, Eq. (5.47):
$i(x', y') \propto \Delta|S(x, y; z)T(x + x', y + y'; z)|^2 dxdydz$
should read

$$i(x', y') \propto \iiint |S(x, y; z)T(x + x', y + y'; z)|^2 dxdydz$$

On p. 140, third line above Eq. (5.48a): " By substituting Eq. (5.45) into …" should read " By substituting Eq. (5.42) into …"

On p.142, Eq. (5.54):$P(x, y; z_0) = P_{1z_0} = h(x, y; z_0)$
should read
$P(x, y; z_0) = \hat{h}(x, y; z_0) = \frac{k_0}{2\pi z_0} \exp\left[\frac{-jk_0}{2z_0}(x^2 + y^2)\right]$

On p.142, Eq. (5.55): $H_c(x, y) = h(x, y; z_0) \otimes |T(x, y)|^2$
should read $H_c(x, y) = \hat{h}(x, y; z_0) \otimes |T(x, y)|^2$

On p.142, Eq. (5.56):$\psi_p(x, y; z_r) \propto h(x, y; z_r) * [h(x, y; z_0) \otimes |T(x, y)|^2]$
should read $\psi_p(x, y; z_r) \propto \hat{h}(x, y; z_r) * \left[\hat{h}(x, y; z_0) \otimes |T(x, y)|^2\right]$

On p.143, Eq. (5.57) :

$Out_1 = \int |P| \sin\Phi \otimes T dz,$ (5.57a)

and

$Out_2 = \int |P| \cos\Phi \otimes T dz.$ (5.57b)

should read

$Out_1 = \mathrm{Im}\{\int P \otimes T dz\},$ (5.57a) and

$Out_2 = \mathrm{Re}\{\int P \otimes T dz\}$. (5.57b)

On p. 143, 7th line below Eq. (5.58): “Figure 5.7 (a)” should read “Figure 5.17 (a)”

On p. 143, 10th line below Eq. (5.58): “Fig. 5.7 (c)” should read “Fig. 5.17 (c)”

On p.145, Caption of Fig. 5.18:

“Fig. 5.18 Recoding for (a) a conventional hologram, (b) a scanning hologram at x_1', and (c) a scanning hologram at x_2'.”

should read

“Fig. 5.18 Recoding for (a) a conventional hologram, (b) a virtual hologram scanned at x_1', and (c) a virtual hologram scanned at x_2'.”

On p. 146 : ψ_S should read ψ_{S_1} in three locations. 1. On Eq. (5.60), on 2 two lines above Eq. (5. 60), 3. On the third line below Eq. (5.60).

On. p.147, last line: $h(x, y; z_0) * [h(x, y; z_0) \otimes |T(x, y)|^2] = |T(x, y)|^2$

should read $\hat{h}(x, y; z_0) * \left[\hat{h}(x, y; z_0) \otimes |T(x, y)|^2\right] = |T(x, y)|^2$

Chapter 6

On this Chapter, replace all symbols λ by λ_0 throughout.

On p. 155, Eq. (6.7):

$$H_c(x, y) = \mathcal{F}\left\{\psi_{p0}(x, y)\exp\left[\frac{-, jk_0}{2z_0}(x^2 + y^2)\right]\right\}_{k_x = \frac{k_0 x}{z_0}, k_y = \frac{k_0 y}{z_0}}$$

should read

$$H_c(x, y) = \mathcal{F}\left\{\psi_{p0}(x, y)\exp\left[\frac{-jk_0}{2z_0}(x^2 + y^2)\right]\right\}_{k_x = \frac{k_0 x}{z_0}, k_y = \frac{k_0 y}{z_0}}$$

On p. 157, the factor “ $-, jk_0$” in 5 equation locations should read “ $-jk_0$”

On p. 159, the equation below Eq. (6.14):

$$h(x, y; z) = \exp(-. jk_0 z)\frac{jk_0}{2\pi z}\exp\left[\frac{-. jk_0}{2z}(x^2 + y^2)\right]$$

should read

$$h(x, y; z) = \exp(-jk_0 z)\frac{jk_0}{2\pi z}\exp\left[\frac{-jk_0}{2z}(x^2 + y^2)\right]$$

On p. 160, roughly in the middle of the page: “[see Eq. 5.57)]” should read “[see Eq. 5.51)]”

On p. 167, 5th line from the bottom : "$\phi_s[2] = 2.1$" should read "$\phi_s[2] = 2.1\pi$"

On p. 169, 6th line below Eq. (6.25): "In other words, successful unwrapping is achievable if" should read "In other words, unwrapping is not necessary if "

On p. 170, 3rd line below Eq. (6.29): " cantly extended." should read " cantly extended without the need to perform unwrapping."

On p. 170, 4rd line below Eq. (6.29):"The two-wavelength procedure begins…" should read " If unwrapping is needed, the two-wavelength procedure begins…"

On p. 172, 5th and 6th line above subsection 6.4.2:
" according to Eq. (6.17), and thus $g[2] = g[1] + 2\pi = 2\pi$ according to Eq. (6.18). Finally, from Eq. (6.19) the unwrapped phase will be $\Delta\phi_{uw}[2] = \Delta\phi_w[2] + g[2]$=…"
should read
"according to Eq. (6.18), and thus $g[2] = g[1] + 2\pi = 2\pi$ according to Eq. (6.19). Finally, from Eq. (6.20) the unwrapped phase will be $\Delta\phi_{uw}[2] = \Delta\phi_w[2] + g[2]$=…"

Chapter 7

On this Chapter, replace all symbols λ by λ_0 throughout.

On p. 179, 3rd line from subsection 7.1 : "The first such CGH was …" should read " The first such 2D CGH was…"

On p. 181, last line: "hologram $a_{mn}e^{-j\phi_{mn}}$." should read "hologram $H_s(x, y)$."

On p.182, Eq.(7.9) should reads as follows:

$$\frac{p_{mn}k_0 d_x}{2\pi f} \ll 1, \quad \frac{q_{mn}k_0 d_y}{2\pi f} \ll 1, \text{ and } p_{mn}\sin\theta \ll \lambda_0,$$

On p. 182, second line below Eq. (7.9): "observation window." Should read " observation window, where the size of the reconstruction plane is $d_x \times d_y$."

On p.183: 4th line from heading Example 7.1 : "The 64x64-pixel object is shown in …" should read "The 64x64-cell object is shown in …"

On p. 183, last line : " domain also with 64 × 64 pixels. The value of each pixel is complex, and will" should read " domain also with 64 × 64 cells. The value of each cell is complex, and will"

On p. 192, 5th line below Eq. (7.16): (x_i, y_i) should read $(x_i, y_i; z_i)$

On. p. 193, 6th line below Eq. (7.18): " interpolative wavefront recording plane…" should read " interpolated wavefront recording plane…"

On p. 195, second line below Eq. (7.19): "(LCOS)" should read " (LCOS) SLM"

On p. 196, second line from bottom : “the LCOS,” should read “ the LCOS SLM,”

On p. 198, last line : “ chosen to the right half of the plane.” should read “chosen to the left half of the plane.”

On p.199, two lines above Eq.(7.28), “we can find the limiting aperture, x_{max},…” should read “we can find the limiting aperture, $2x_{max}$,…”.

On p.206, last sentence, “…of a complex hologram $H_c(x,y) = |H_c|e^{j\vartheta}$,…” should read “…of a complex hologram $H_c(x,y)$,…”.

On p. 207, second line below Eq. (7.38): “ … on an amplitude hologram.” should read “…on an amplitude SLM.”

On p.210, problem 7.2: should read as follows:

$\frac{p_{mn}k_0 d_x}{2\pi f} \ll 1$, $\frac{q_{mn}k_0 d_y}{2\pi f} \ll 1$, $p_{mn}\sin\theta \ll \lambda_0$, and $\frac{k_0}{f}\alpha_{mn}d_x \ll 1$.