Introduction to Optical Microscopy (1st Edition)
Errata and Clarifications

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November 18, 2011

Page 1: Eqs. 1.1 and 1.2
Should be double integrals to reflect integrations over two separate variables.

Page 1: Line above Eq. 1.4
Clarification: "wavelength" refers to "free-space wavelength".

Page 16: Line above Eq. 2.14
$\mathcal{H}(\vec{k}_\perp; z)$ should be $\mathcal{H}(\vec{\kappa}_\perp; z)$.

Page 34: Line below Eq. 3.20
$-\frac{f_2}{f_1}$ should be $-\frac{f_1}{f_0}$

Page 53: It should be clarified that the condition $(\vec{\rho}_{1d} \cdot \vec{\rho}_{1c})_{\max} \ll \lambda z$ implies that $J_1(\vec{\rho}_{1d}, \vec{\rho}_{1c})$ in Eq. 4.46 is separable only *locally* in plane 1.

Page 75: Eq. 5.35
The factor of 4 in the brackets is erroneous and should be omitted.

Page 85: Eq. 5.66
$\mathcal{I}(\vec{\kappa}_\perp; z)$ should read $\mathcal{I}(\vec{\kappa}_{\perp d}; z)$.

Page 89: A note is made at the bottom of the page that Eqs. 6.6 and 6.7 are valid subject to the rough conditions $A_{\mu 0} A_0 \ll \lambda^2 z^2$ and $A_{\mu 1} A_1 \ll \lambda^2 z^2$. Clearly these conditions cannot both be satisfied at once. It should be clarified that Eqs. 6.6 and 6.7 are subject only to the first condition $A_{\mu 0} A_0 \ll \lambda^2 z^2$ (i.e. a Fraunhofer approximation). The second condition $A_{\mu 1} A_1 \ll \lambda^2 z^2$ implies that the separability of coherence areas $A_{\mu 1}$ should be regarded as *local* only (see above clarification for page 53).

Page 119: Fig. 7.5
$\Gamma_I(\tau)$ should be $\frac{\Gamma_I(\tau)}{\langle I \rangle^2}$.

Page 133: 3rd paragraph
"referemce" should be "reference".

Page 140: Fig. 8.2 and Eq. 8.7
$\langle K \rangle$ here is not, a priori, the same variable as in Eq. 8.9, and should be written as $\bar{K}$ (the two variables become the same only a posteriori).

Pages 174-175: Eqs. 9.58, 9.59 and 9.60
$\vec{E}_{\text{scatt}}(\vec{r})$ on the r.h.s. of Eq. 9.58 and l.h.s. of Eqs. 9.59 and 9.60 should be written as a different variable $\vec{E}_{\text{s}}(\vec{r})$ (i.e. it is not the same $\vec{E}_{\text{scatt}}(\vec{r})$ as in Eq. 9.53).

Page 188: Eq. 10.17 and paragraph below
$\phi(\vec{\rho}_c)$ should be $\phi(\vec{\rho}_{0c})$.

Page 231: Eqs. 12.4 and 12.5
$E_i(...)E_i^*(...)$ should be $\langle E_i(...)E_i^*(...)\rangle$.

Page 231: We have assumed that the velocity of light is the same in the sample and reference arms. In particular, we have neglected changes in the velocity of light due to the sample index of refraction. Taking this index of refraction into account is equivalent to a rescaling of z_0 thoughout the chapter. (Note: we have also neglected the possibility of dispersion).

Page 287: In the transition from Eqs. 14.18 to 14.19, we have implicitly taken the associated pupil functions to be real.

Page 307: Second bullet above Fig. 15.3
The phrase, "independently of z_0" was added in error and should be omitted.

Page 308: Eqs. 15.16 and 15.17
The equations implicitly assume that the illumination aperture is circular.

Pages 327-328: Left hand side of Eq. 16.15 and Fig. 16.3
$\delta\kappa_m$ should be $2\pi\delta\kappa_m$.

Page 365: Eq. 17.46
The prefactor $1/\kappa^2\Omega_i$ is erroneous and should be omitted (note: when in focus, the imaged speckle is assumed to be well resolved, meaning $\mathrm{PSF}_i(\vec{\rho}_0 - \vec{\rho}_0', 0)$ can be replaced by its value at $\mathrm{PSF}_i(\vec{0}, 0)$.

Pages 376-378: Eqs. 18.7, 18.9, 18.10 and 18.11
The prefactor E_i has been erroneously omitted. While this prefactor has no bearing on the discussion, it should be included for dimensional consistency.

Page 393: Last paragraph
"namometers" should be "nanometers"