Measuring ocular aberrations in the peripheral visual field - errata

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Due to proof reading failures, there were some errors in the published equations of Atchison et al.[1] A term $(1-\cos\phi)^2$ in equations (63), (64), (67), (68), (70) and (71) was wrongly given as $(1+\cos\phi)^2$. Corrected versions of the equations are given below. The form of equations (67) and (68) is slightly different from that in the paper to make it more consistent with the form of equations (63) and (64).

$$2J'_{180} = \frac{-2\{W_m \cos 2\alpha \sin^2\phi + W_{45} \cos 2\alpha \sin 2\alpha (1-\cos\phi)^2 + W_{180}[\cos^2 2\alpha (1+\cos^2\phi) + 2\sin^2 2\alpha \cos\phi]\}}{R^2 \cos^2\phi} \quad (63)$$

$$J'_{180} = \frac{\{M \cos 2\alpha \sin^2\phi + J_{45} \cos 2\alpha \sin 2\alpha (1-\cos\phi)^2 + J_{180}[\cos^2 2\alpha (1+\cos^2\phi) + 2\sin^2 2\alpha \cos\phi]\}}{2\cos^2\phi} \quad (64)$$

$$2J'_{45} = \frac{-2\{W_m \sin 2\alpha \sin^2\phi + W_{45}[2\cos^2 2\alpha \cos\phi + \sin^2 2\alpha(1+\cos^2\phi)] + W_{180}\cos 2\alpha \sin 2\alpha(1-\cos\phi)^2\}}{R^2\cos^2\phi}$$

(67)

$$J'_{45} = \frac{\{M \sin 2\alpha \sin^2\phi + J_{45}[2\cos^2 2\alpha \cos\phi + \sin^2 2\alpha(1+\cos^2\phi)] + J_{180}\cos 2\alpha \sin 2\alpha(1-\cos\phi)^2\}}{2\cos^2\phi}$$

(68)

$$J'_{45} = \frac{-\left[\begin{array}{l}(2\sqrt{3}C_2^0 - 6\sqrt{5}C_4^0 + 12\sqrt{7}C_6^0 - 20\sqrt{9}C_8^0 + 30\sqrt{11}C_{10}^0 - ...)\sin 2\alpha \sin^2\phi \\ + (\sqrt{6}C_2^{-2} - 3\sqrt{10}C_4^{-2} + 6\sqrt{14}C_6^{-2} - 10\sqrt{18}C_8^{-2} + 15\sqrt{22}C_{10}^{-2} - ...)[2\cos^2 2\alpha \cos\phi \\ + \sin^2 2\alpha(1+\cos^2\phi)] \\ + (\sqrt{6}C_2^2 - 3\sqrt{10}C_4^2 + 6\sqrt{14}C_6^2 - 10\sqrt{18}C_8^2 + 15\sqrt{22}C_{10}^2 - ...)\cos 2\alpha \sin 2\alpha(1-\cos\phi)^2\end{array}\right]}{R^2\cos^2\phi}$$

(70)

$$J'_{180} = \frac{-\left[\begin{array}{l}(2\sqrt{3}C_2^0 - 6\sqrt{5}C_4^0 + 12\sqrt{7}C_6^0 - 20\sqrt{9}C_8^0 + 30\sqrt{11}C_{10}^0 - ...)\cos 2\alpha \sin^2\phi \\ + (\sqrt{6}C_2^{-2} - 3\sqrt{10}C_4^{-2} + 6\sqrt{14}C_6^{-2} - 10\sqrt{18}C_8^{-2} + 15\sqrt{22}C_{10}^{-2} - ...)\cos 2\alpha \sin 2\alpha(1-\cos\phi)^2 \\ + (\sqrt{6}C_2^2 - 3\sqrt{10}C_4^2 + 6\sqrt{14}C_6^2 - 10\sqrt{18}C_8^2 + 15\sqrt{22}C_{10}^2 - ...)[2\sin^2 2\alpha \cos\phi \\ + \cos^2 2\alpha(1+\cos^2\phi)]\end{array}\right]}{R^2\cos^2\phi}$$

(71)

Reference

1. D. A. Atchison, D. H. Scott, and W. N. Charman, "Measuring ocular aberrations in the peripheral visual field using Hartmann-Shack aberrometry," Journal of the Optical Society of America A. Optics and Image Science **24**(9), 2963-2973 (2007).