Erratum: Full characterization of Airy beams under physical principles **[Phys. Rev. A **89**, 023807 (2014)]**

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In our paper we have demonstrated that Airy beams are structured wave fields and that they are composed by the superposition of traveling waves. In doing so we determined the geometry of their wave fronts. From this approach we proposed a straightforward method that allows us to determine the maximum propagation distance $\xi_{\max}$ (in normalized units) of an Airy beam. It is simply given by the intersection of the parabolic trajectory followed by the main maximum of the beam and the normal ray coming from the wave front at the edge of the apertured beam. A diagram of this situation is shown in Fig. 1; the wave front is not shown for space reasons. Unfortunately, a mistake in the calculation has been brought to our attention [1]. We have now identified an erroneous sign in Eq. (27) of our original paper. With the Airy beam bending towards the right on propagation, note that the sign of the position of first intensity maximum a_1 at the onset of propagation is negative. This is the erroneous sign in our original paper. Our Eq. (27) in the original paper should therefore be given instead by the following expression:

$$s - \left(\frac{\xi}{2}\right)^2 = -|a_1|, \quad (1)$$

where (as in the original paper) we have used the normalized coordinates $s = x/x_0$ and $\xi = z/kx_0^2$ with x_0 being a given transverse scale and k is the wave number. We proceed as we did in our original paper: We know that light rays are normal to the wave front and therefore in this case, the equation for the ray we are interested in can be expressed as

$$\xi = |s_0|^{-1/2}(s + |s_0|), \quad (2)$$

where $-|s_0|$ is the point where the beam is truncated, see Fig. 1. Using the two equations above we have that the correct expression to calculate the maximum propagation distance is given by

$$\xi_{\max} = 2(\sqrt{|s_0|} - \sqrt{|a_1|}), \quad (3)$$

by substituting this value in Eq. (1) the position of the corresponding transverse coordinate is obtained fully characterizing the maximum propagation distance of an Airy beam.

FIG. 1. Geometry based on the physics of an Airy beam to determine its maximum propagation distance. See the text.

[1] X. Chu, S. Zhao, and Y. Fang, *Opt. Commun.* **414**, 5 (2018).