

Quasi one-dimensional light beam generated by a graded-index microsphere: errata

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Abstract: We correct a typo found in [Opt. Express **17**, 3722–3731 (2009)]. The overall approach and results stay unchanged.

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References and links

1. S.-C. Kong, A. Taflove, and V. Backman, “Quasi one-dimensional light beam generated by a graded-index microsphere,” Opt. Express **17**(5), 3722–3731 (2009).

In the article [1], a profile of the refractive-index contrast (relative to the background medium) for the graded-index microsphere was used for the numerical simulations. However, a typo appeared associated with the material parameters of the graded-index microsphere. This is corrected below.

Specifically, Eq. (1) provides the refractive-index contrast profile $n(r)$ for the graded-index microsphere. This equation should read:

$$n(r) = \sqrt{\varepsilon_{r,\max} - \frac{(\varepsilon_{r,\max} - 1)}{a} r} \quad (1)$$

where a is the radius of the microsphere, r is the radial distance from the microsphere’s center, and $\varepsilon_{r,\max}$ is the maximum value of the dielectric permittivity contrast relative to the infinite background medium surrounding the microsphere.

$\varepsilon_{r,\max}$ is set to 2 for all of the numerical simulations in this paper. Thus, the refractive-index contrast $n(r)$ properly has a maximum value of $\sqrt{2}$ at the center of the microsphere, and decreases in the radial direction to a minimum value of 1 at the microsphere surface. Before this correction, the maximum $n(r)$ at the microsphere center in Ref [1]. was improperly given as 2.

The authors regret the typo. Please note, however, that it does not affect any of the numerical results presented in [1]