Erratum: Reflection and diffraction at the end of a cylindrical dielectric nanowire: Exact analytical solution [Phys. Rev. B 78, 085318 (2008)]

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In our paper, in the definitions of the fictitious current densities, the unit vector $\mathbf{e}_z$ was lost. Equations (11), (12), (45), and (46), should read as

$$\mathbf{K}^e = \frac{c}{4\pi}\mathbf{e}_z \times \mathbf{H}_t^{(i)}, \quad \mathbf{K}^m = -\frac{c}{4\pi}\mathbf{e}_z \times \mathbf{E}_t^{(i)}, \quad \mathbf{L}^e = \frac{c}{4\pi}\mathbf{e}_z \times \mathbf{H}_t'', \quad \mathbf{L}^m = -\frac{c}{4\pi}\mathbf{e}_z \times \mathbf{E}_t'', \tag{1}$$

respectively. The fictitious current components must be corrected according to the rules

$$\kappa_r^\sigma = -\hat{\kappa}_\theta^\sigma, \quad \kappa_\theta^\sigma = \hat{\kappa}_r^\sigma, \quad \lambda_r^\sigma = -\hat{\lambda}_\theta^\sigma, \quad \lambda_\theta^\sigma = \hat{\lambda}_r^\sigma, \tag{2}$$

where a hat above a symbol denotes the corresponding quantity given in the paper (Appendices B and D). This does not change the general theory represented in Secs. II, III, and IV as it is written in terms of κ_μ^σ and λ_μ^σ. However, the specific results obtained for symmetric waveguide modes (Sec. V) are modified.

1. TM modes. In this case

$$\tilde{E}_{j\theta}(r;\beta) = \tilde{H}_{jr}(r;\beta) = \tilde{H}_{jz}(r;\beta) = 0, \quad b_{2n}(\beta) = b_{1n}(\beta) = 0, \tag{3}$$

$$a_{2n}(\beta) = \frac{2\pi^2}{cq_1}\frac{\beta+\beta_0}{D_{TM}}\left\{\frac{2i\epsilon_1}{\pi a}P_{1>}^e(a) + P_{2<}^e(a)[\epsilon_1 q_2 H_1^{(1)}(q_1 a)H_0^{(1)}(q_2 a) - \epsilon_2 q_1 H_0^{(1)}(q_1 a)H_1^{(1)}(q_2 a)]\right\}, \tag{4}$$

$$a_{1n}(\beta) = \frac{2\pi^2}{cq_2}\frac{\beta+\beta_0}{D_{TM}}\left\{\frac{2i\epsilon_2}{\pi a}P_{2<}^e(a) + P_{1>}^e(a)[\epsilon_1 q_2 J_1(q_1 a)J_0(q_2 a) - \epsilon_2 q_1 J_0(q_1 a)J_1(q_2 a)]\right\}, \tag{5}$$

where the quantities $P_{1>}^e(a)$ and $P_{2<}^e(a)$ are given by Eqs. (63) and (64), respectively. As a result, $r_{00}=0$ and $R_{01}=0$. For the diffracted field one obtains

$$G_\chi(\chi) = -\frac{2}{\sqrt{\epsilon_1}}\int_0^\infty \{[\kappa_r^e(r') + \lambda_r^e(r')]\cos\chi + \sqrt{\epsilon_1}[\kappa_\theta^m(r') + \lambda_\theta^m(r')]\}J_1(k_1 r' \sin\chi)r' dr' \tag{6}$$

and $G_\theta(\chi)=0$.

2. TE modes. In this case

$$\tilde{E}_{jr}(r;\beta) = \tilde{E}_{jz}(r;\beta) = \tilde{H}_{j\theta}(r;\beta) = 0, \quad a_{2n}(\beta) = a_{1n}(\beta) = 0, \tag{7}$$

$$b_{2n}(\beta) = i\frac{2\pi^2\omega}{c^2 q_1\beta_0}\frac{\beta+\beta_0}{D_{TE}}\left\{\frac{2i\epsilon_1}{\pi a}P_{1>}^e(a) + \epsilon_2 P_{2<}^e(a)[q_2 H_1^{(1)}(q_1 a)H_0^{(1)}(q_2 a) - q_1 H_0^{(1)}(q_1 a)H_1^{(1)}(q_2 a)]\right\}, \tag{8}$$

$$b_{1n}(\beta) = i\frac{2\pi^2\omega}{c^2 q_2\beta_0}\frac{\beta+\beta_0}{D_{TE}}\left\{\frac{2i\epsilon_2}{\pi a}P_{2<}^e(a) + \epsilon_1 P_{1>}^e(a)[q_2 J_1(q_1 a)J_0(q_2 a) - q_1 J_0(q_1 a)J_1(q_2 a)]\right\}, \tag{9}$$

where the quantities $P_{1>}^e(a)$ and $P_{2<}^e(a)$ are given by Eqs. (73) and (74), respectively. Similar to the case of TM modes, $r_{00}=0$ and $R_{01}=0$. For the far-field diffraction one obtains $G_\chi(\chi)=0$ and

$$G_\theta(\chi) = \frac{2}{\sqrt{\epsilon_1}}\int_0^\infty \{[\kappa_\theta^e(r') + \lambda_\theta^e(r')] - \sqrt{\epsilon_1}[\kappa_r^m(r') + \lambda_r^m(r')]\cos\chi\}J_1(k_1 r' \sin\chi)r' dr'. \tag{10}$$

