

Orthonormalization of Substrate and Guided Modes in Effective Resonator Model of Dielectric Multilayer Structure ERRATUM

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This note contains an erratum to [A. Rudziński, *Acta Phys. Pol. A* **112**, 505 (2007)].

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The integral (6) in [1] does not vanish for $\mathbf{q} = \mathbf{k}_*$, therefore the value of $\tilde{F}_{k\epsilon}$ for guided modes, given by (24) in [1], is incorrect. The correctly calculated value is

$$\tilde{F}_{k\epsilon} = \begin{cases} 4\pi^2 \int_{-\infty}^{\infty} dz n^2(z) \phi_{k_*\epsilon}^*(z) \phi_{k\epsilon}(z), & \text{if } \rho_{\epsilon}(\mathbf{k}) \neq 0, \\ 0, & \text{if } \rho_{\epsilon}(\mathbf{k}) = 0, \end{cases} \quad (24)$$

where

$$\begin{aligned} \int_{-\infty}^{\infty} dz n^2(z) \phi_{k_*\epsilon}^*(z) \phi_{k\epsilon}(z) &= \frac{n_{(L)}^2 u_{Lk\epsilon}^2}{2|k_z^{(L)}|} + \frac{n_{(R)}^2 u_{Rk\epsilon}^2}{2|k_z^{(R)}|} \\ &+ \sum_{-N_L < j < N_R} n_{(j)}^2 L_z^{(j)} \left\{ \left[u_{jk\epsilon}^2 \exp\left(i k_z^{(j)} L_z^{(j)}\right) + v_{jk\epsilon}^{*2} \exp\left(-i k_z^{(j)} L_z^{(j)}\right) \right] \right. \\ &\left. \times \mathbf{e}_{k_*^{(j)*\epsilon}} \mathbf{e}_{k^{(j)\epsilon}} \frac{\sin\left(k_z^{(j)} L_z^{(j)}\right)}{k_z^{(j)} L_z^{(j)}} + 2u_{jk\epsilon} v_{jk\epsilon}^* \mathbf{e}_{k^{(j)*\epsilon}} \mathbf{e}_{k^{(j)\epsilon}} \right\}. \end{aligned} \quad (24a)$$

References

- [1] A. Rudziński, *Acta Phys. Pol. A* **112**, 505 (2007).

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