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Errata to "FIELD ANALYSIS OF DIELECTRIC WAVEGUIDE DEVICES BASED ON COUPLED TRANSVERSE-MODE INTEGRAL EQUATION - MATHEMATICAL AND NUMERICAL FORMULATIONS"

by H.-W. Chang and M.-H. Sheng, in *Progress In Electromagnetics Research*, PIER 78, 329–347, 2008

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(1) Page 331, Figure 1: The label on the z-axis x_1, x_{m-1}, x_m, x_N should be z_1, z_{m-1}, z_m, z_N

(2) Page 335, Equation (6d): There is a missing symbol Δ in the denominator of the middle expression of Eq. (6d). It should be $\sin\beta_n^{(N+1)}\Delta z_{N+1}$. Also the text in the parenthesis "(TM-PEMW)" should be "(TM-PMCW)".

(3) Page 337, three lines after Fig. 2: The sentence
$\mathbf{Q}_h^{(m)}$ operator "back reflects" the left-interface source function $\mathcal{H}_{m-1}(x)$ to the right-interface target function $\mathcal{E}_m(x)$. $\mathbf{R}_h^{(m)}$ operator "reflects" the right-interface source functions $\mathcal{H}_{m-1}$ to the left-interface target function $\mathcal{E}_m$.
should read
$\mathbf{Q}_h^{(m)}$ operator "back reflects" from the right-interface source function $\mathcal{H}_m(x)$ into its transverse dual component $\mathcal{E}_m(x)$ at the same location. $\mathbf{R}_h^{(m)}$ operator "reflects" from the left-interface source function $\mathcal{H}_{m-1}(x)$ into its dual component $\mathcal{E}_{m-1}(x)$.

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(4) Page 337, Equation (8b): The original express

$$\mathcal{E}_{m-1}(x)=E_x^{(m)}(x,z_{m-1})=\int \mathbf{Q}_h^{(m)}\mathcal{H}_{m-1}(x')dx'+\int \mathbf{S}_h^{(m)}\mathcal{H}_m(x')dx',$$
$$\mathcal{E}_{m-1}(x)=E_x^{(m)}(x,z_m)=\int \mathbf{P}_h^{(m)}\mathcal{H}_{m-1}(x')dx'+\int \mathbf{R}_h^{(m)}\mathcal{H}_m(x')dx' \tag{8b}$$

should be

$$\mathcal{E}_{m-1}(x)=E_x^{(m)}(x,z_{m-1})=\int \mathbf{R}_h^{(m)}\mathcal{H}_{m-1}(x')dx'+\int \mathbf{S}_h^{(m)}\mathcal{H}_m(x')dx',$$
$$\mathcal{E}_{m}(x)=E_x^{(m)}(x,z_m)=\int \mathbf{P}_h^{(m)}\mathcal{H}_{m-1}(x')dx'+\int \mathbf{Q}_h^{(m)}\mathcal{H}_m(x')dx' \tag{8b}$$

(5) Page 338, Equation (8d): In the sub-expression of the TE impedance $q_n^{(N+1)}$, the sub and superscript for $\beta_k^{(i)}$ should be $\beta_n^{(N+1)}$. This occurs twice in (8d). Also the text in the parenthesis "(TE-PECW)" of the third expression of (8d) should be "(TM-PECW)".

(6) Page 341, Equation (10e): This is related to error (2). There is also a missing symbol Δ in the denominator of the middle expression of Eq. (10e). It should be $\sin\beta_n^{(N+1)}\Delta z_{N+1}$. The text in the parenthesis "(TE-PECW)" is correct.

(7) Page 341, Equation (11b): In the sub-expression of the for TM admittance $q_n^{(N+1)}$, both sub and superscripts for $\beta_k^{(i)}$ should be $\beta_n^{(N+1)}$. This occurs twice in (11b).

(8) Page 341, Equation (12b): There are errors in the sub and superscripts in second and third expression of (12b).

$$O_{k,l}^{\bar{i},j} \triangleq \int \phi_k^{(i)}(x)\frac{1}{\varepsilon_r^{(j)}(x)}\phi_l^{(i)}(x)dx,$$
$$O_{k,l}^{j,\bar{i}} \triangleq \int \phi_l^{(i)}(x)\frac{1}{\varepsilon_r^{(j)}(x)}\phi_k^{(i)}(x)\,dx = O_{k,l}^{\bar{i},j}.$$

They should be corrected as

$$O_{k,l}^{\bar{i},j} \triangleq \int \phi_k^{(i)}(x)\frac{1}{\varepsilon_r^{(j)}(x)}\phi_l^{(j)}(x)dx,$$
$$O_{k,l}^{j,\bar{i}} \triangleq \int \phi_k^{(j)}(x)\frac{1}{\varepsilon_r^{(j)}(x)}\phi_l^{(i)}(x)\,dx = O_{l,k}^{\bar{i},j}.$$

(9) Page 342, Equation (12c): There should be a minus sign for the expression $\boldsymbol{G}_{i,i+1}$. The correct formula should look like

$$\boldsymbol{G}_{i,i+1} = -\boldsymbol{O}^{\bar{i},i+1}\boldsymbol{s}^{(i+1)}\boldsymbol{O}^{i+1,\overline{i+1}}.$$