between two cells of equal permittivity. Although the normal component of the actual electric field at the boundary between two cells of equal permittivity must be continuous, the discontinuity of the pulse functions at the boundary of the two cells is unavoidable because the pulse functions are constant throughout the cells. The fictitious surface charge density that is equivalent to the discontinuity in the pulse functions acts as a source of calculated fields that should actually be zero.

Next, they made PFBC calculations, but removed the fictitious surface charge density by simply not integrating the integral surface charge density term over any surfaces between cells having the same permittivity. Again, they found serious errors in the results. Then they both removed the fictitious surface charge density and used polyhedral cells to model the surface discontinuities more accurately. In this case, they found good agreement between numerical calculations, both for a homogeneous cylinder and for a two-layer cylinder. It is important to note the advantage of using the free-space Green's function integral equation (FGIE), which contains an explicit source term for the surface charge density. Since the dyadic Green's function integral equation (DGIE) does not contain a term that specifically corresponds to the charge density, elimination of the fictitious surface charge density would not be tractable with the DGIE. Also, as we pointed out [3], the FGIE gave more accurate results for our calculations with pulse basis functions and cubical cells than the DGIE. We attributed this to the sensitivity of the calculations to the charge density source term.

In our opinion, the results of Borup *et al.* [4] clearly demonstrate that the combination of the inadequate representation of the surfaces between dielectric discontinuities by the cubical cells and the inability of the pulse basis functions to satisfy the boundary conditions between cells is the primary source of error in the PFBC numerical calculation of internal field distribution. It seems clear that satisfactory calculations using an integral equation formulation will therefore require modeling dielectric discontinuities by polyhedral cells, even though this is significantly more complicated than using cubical cells.

An interesting question that should be investigated is whether using linear basis functions with polyhedral cells would require fewer unknowns than using pulse basis functions with polyhedral cells. Since linear basis functions can represent fields inside cells, including boundary conditions, much better than pulse functions, we found that larger cells could be used with linear basis functions than with pulse functions, and in the cases we tested, we obtained better accuracy with linear basis functions and polyhedral cells than with pulse basis functions and polyhedral cells for the same number of unknowns [5]. If the number of unknowns using linear basis functions were reduced by relating the fields in adjacent cells through the boundary conditions, as suggested in the paper in question, it might be possible to get better accuracy with fewer unknowns using linear basis functions.

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Corrections to "Spectral-Domain Analysis of Scattering from *E*-Plane Circuit Elements"

QIU ZHANG AND TATSUO ITOH

In the above paper,[1] the expressions for LSM modes should have read as follows:

$$+\begin{cases} \displaystyle\sum_{m=1}^{\infty}\sum_{n=1}^{\infty} D_{mn}^{-}\psi_m(x)\cos(\alpha_n y)\, e^{j\beta'_{mn}(z+W/2)} & z<-W/2 \\ \displaystyle\sum_{m=1}^{\infty}\sum_{n=1}^{\infty} \psi_m(x)\cos(\alpha_n y)\left(F_{mn}^{-}e^{j\beta'_{mn}z}+F_{mn}^{+}e^{-j\beta'_{mn}z}\right) & |z|<W/2 \\ \displaystyle\sum_{m=1}^{\infty}\sum_{n=1}^{\infty} D_{mn}^{+}\psi_m(x)\cos(\alpha_n y)\, e^{-j\beta'_{mn}(z-w/2)} & z>W/2 \end{cases} \quad \text{(in eq. (1))}$$

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The authors are with the Department of Electrical and Computer Engineering, University of Texas, Austin, TX 78712.

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[1] Q. Zhang and T. Itoh, *IEEE Trans Microwave Theory Tech*, vol. MTT-35, pp. 138–150, Feb. 1987

$$\psi_m(x) = \begin{cases} C'_m \sinh(\gamma'_{1m} x) & 0 < x < h_1 \\ A'_m \sinh[\gamma'_{2m}(x-h_1)] + B'_m \cosh[\gamma'_{2m}(x-h_1)] & h_1 < x < h_1 + h_2 \\ \sinh[\gamma'_{3m}(a-x)] & h_1 + h_2 < x < a \end{cases} \tag{3}$$

$$+ \sum_{m=1}^{\infty} k_n b \sinh(\gamma'_{3m} h_3) \Bigg\{ D^-_{mn} \left[\frac{e^{-j\beta W/2}}{j(\beta + \beta'_{mn})} - \pi\delta(\beta + \beta'_{mn}) e^{j\beta'_{mn} W/2} \right]$$

$$+ \left[F^-_{mn} \frac{\sin \frac{(\beta + \beta'_{mn}) W}{2}}{\beta + \beta'_{mn}} + F^+_{mn} \frac{\sin \frac{(\beta - \beta'_{mn}) W}{2}}{\beta - \beta'_{mn}} \right] \cdot$$

$$+ D^+_{mn} \left[\pi\delta(\beta - \beta'_{mn}) e^{j\beta'_{mn} W/2} - \frac{e^{j\beta W/2}}{j(\beta - \beta'_{mn})} \right] \Bigg\}, \qquad n = 0,1,2,\cdots \qquad \text{(in eq. (11))}$$

$$D^{\pm}_{mn} = \mp \lim_{\beta \to \pm \beta'_{mn}} \left[(\beta \mp \beta'_{mn}) \frac{\tilde{G}_{yy}(\alpha_n, \beta) \tilde{J}_y(\alpha_n, \beta) + \tilde{G}_{yz}(\alpha_n, \beta) \tilde{J}_z(\alpha_n, \beta)}{jb \sinh(\gamma'_{3m} h_3)} e^{\mp j W\beta/2} \right] \quad (n = 1,2,3,\cdots;\ m = 1,2,3,\cdots). \tag{19b}$$