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Corrections to "Modeling Three-Dimensional Discontinuities in Waveguides using Non-Orthogonal FDTD Algorithm"

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In the above paper¹ there were several typographical errors:

Manuscript received March 13, 1992.

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IEEE Log Number 9200870.

¹ J.-F. Lee, R. Palandech, and R. Mittra, *IEEE Trans. Microwave Theory Tech.*, vol. 40, no. 2, pp. 346-352, Feb. 1992.

- In Eqs. (24), (25), g_{lm} should be replaced by g^{lm} .
- Equation (30) should be modified as

(a) Two-Dimensional Case:

$$\begin{aligned} \|\nabla\| &= \sup_E \frac{\|\nabla E\|}{\|E\|} \\ &= 2\sqrt{\frac{1}{(\Delta_x)^2} + \frac{1}{(\Delta_y)^2}} \\ \Rightarrow \Delta_t &\leq \frac{1}{\sqrt{\frac{1}{(\Delta_x)^2} + \frac{1}{(\Delta_y)^2}}} \end{aligned}$$

(b) Three-Dimensional Case:

$$\begin{aligned} \|\nabla\| &= \sup_E \frac{\|\nabla E\|}{\|E\|} \\ &= 2\sqrt{\frac{1}{(\Delta_x)^2} + \frac{1}{(\Delta_y)^2} + \frac{1}{(\Delta_z)^2}} \\ \Rightarrow \Delta_t &\leq \frac{1}{\sqrt{\frac{1}{(\Delta_x)^2} + \frac{1}{(\Delta_y)^2} + \frac{1}{(\Delta_z)^2}}} \end{aligned}$$

Furthermore, in Fig. 13 of the paper, the oscillations observed in the measurements were due to the mismatches at the input/output ports; likewise, the oscillations in the non-orthogonal FDTD results are attributable to the imperfect absorbing boundary conditions (ABCs). We thank Prof. C. H. Chan at University of Washington in Seattle for bringing this matter to our attention.