Abstracts

A Study of the Nonorthogonal FDTD Method Versus the Conventional FDTD Technique for Computing Resonant Frequencies of Cylindrical Cavities

P.H. Harms, J.-F. Lee and R. Mittra. "A Study of the Nonorthogonal FDTD Method Versus the Conventional FDTD Technique for Computing Resonant Frequencies of Cylindrical Cavities." 1992 Transactions on Microwave Theory and Techniques 40.4 (Apr. 1992 [T-MTT]): 741-746.

In this paper, the nonorthogonal finite difference time domain (FDTD) technique is used to compute the resonant frequencies of dielectric-filled cylindrical cavities. Because the method is based on the nonorthogonal coordinate system, it is not restricted to specific geometries, e.g., rectangular or axially symmetric geometries and is suitable for analyzing cavities of arbitrary shape. The advantages of this technique over the conventional FDTD algorithm with a staircase grid are readily shown in a convergence study, where the two methods are used to compute the domimant resonant frequency of a cylindrical cavity, The accuracy of the technique for calculating the resonant frequencies of the first few modes is demonstrated by comparing the results obtained via this technique with those derived by using two versions of the finite element method in the frequency domain.

❑ Return to main document.