Abstracts

The Analysis of General Two-Dimensional PEC Structures Using a Modified CPFDTD Algorithm (Short Papers)

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The use of the contour path finite difference time domain (CPFDTD) method with locally distorted contours has been shown to give accurate results for curved metal structures. However, the numerical stability of this scheme is not guaranteed and significant skill is required in order to generate an appropriate grid. In this contribution, we present a modification to the CPFDTD scheme which ensures stability and give a step-by-step procedure for simple generation of the distorted grid. Examples are presented to demonstrate that the modified scheme yields results superior to those obtained using the standard staircase finite difference time domain (FDTD) approach. Example geometries are cylindrical cavities having complex cross-sections with smooth surfaces and right-angle bends. The accuracy of the method is demonstrated by comparison to analytical results where available.

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