Abstracts

A locally conformal finite-difference time-domain (FDTD) algorithm for modeling three-dimensional perfectly conducting objects

A novel conformal finite-difference time-domain (CFDTD) technique for locally distorted contours that accurately model curved metallic objects is presented in this paper. This approach is easy to implement and is numerically stable. Several examples are presented to demonstrate that the new method yields results that are far more accurate than those generated by the conventional staircasing approach. Example geometries include cylindrical and spherical cavities, and a circular microstrip patch antenna. Accuracy of the scheme is demonstrated by comparing the results derived from analytical and Method of Moments (MoM) techniques.

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