Abstracts

The Finite-Difference - Time-Domain Method and its Application to Eigenvalue Problems

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This paper describes the application of the finite-difference method in the time domain to the solution of three-dimensional (3-D) eigenvalue problems. Maxwell's equations are discretized in space and time, and steady-state solutions are then obtained via Fourier transform. While achieving the same accuracy and versatility as the TLM method, the finite-difference-time-domain (FD-TD) method requires less than half the CPU time and memory under identical simulation conditions. Other advantages over the TLM method include the absence of dielectric boundary errors in the treatment of 3-D inhomogeneous planar structures, such as microstrip. Some numerical results, including dispersion curves of a microstrip on anisotropic substrate, are presented.

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