Abstracts

Modeling of Discontinuities in Microwave and Millimeter Wave Integrated Circuits Using the Curvilinear Finite Difference Time Domain Approach

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In this paper we describe a full-wave approach based upon the curvilinear Finite Difference Time Domain (FDTD) algorithm for accurate modeling of discontinuities in microstrip lines that do not conform to the Cartesian coordinate system. The use of the curvilinear FDTD approach circumvents the staircasing problem that arises in the TLM method, as well as in the conventional FDTD approach based upon the Yee-grid, and, consequently, allows one to accurately model arbitrary geometries without the use of a very fine mesh. The scattering parameters of several representative discontinuities are calculated, and numerical results are compared to those available from microwave simulators such as TouchStone.

❑ Return to main document.