Abstracts

Modal MRTD approaches for the efficient analysis of waveguide discontinuities

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This paper, the multi-resolution time-domain (MRTD) technique is applied to the waveguide discontinuity problem for fast-scattering parameter computation. To improve the computational efficiency, both three-dimensional (3-D) waveguide regions, including discontinuities, and one dimensional (1-D) homogeneous waveguide region, terminated with the modal absorbing boundary condition (ABC), are simulated in the wavelet domain with the mode composition/expansion algorithm from the modal analysis. A WG-90 rectangular waveguide with a thick asymmetric iris is analyzed and the numerical results are compared with conventional finite-difference time-domain (FDTD) results and mode-matching results.

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