Abstracts

An Efficient Finite Element Approach for the Analysis of Three-Dimensional Transmission Line Discontinuities Using an Asymptotic Boundary Condition

A. Khebir, A.B. Kouki and R. Mittra. "An Efficient Finite Element Approach for the Analysis of Three-Dimensional Transmission Line Discontinuities Using an Asymptotic Boundary Condition." 1990 MTT-S International Microwave Symposium Digest 90.3 (1990 Vol. III [MWSYM]): 1159-1162.

In this paper, a novel technique is developed for efficient finite element solution of open region three-dimensional transmission line structures in the quasi-TEM regime. Starting with the general form of the solution to the three-dimensional Laplace's equation in spherical coordinates, a set of asymptotic boundary condition (ABC) operators is derived. The second-order ABC is then applied on a conformable outer boundary for the purpose of truncating the FEM mesh in an efficient manner. To illustrate its application, the method is used to compute the capacitance of a rectangular microstrip patch and the results are found to be in good agreement with data published elsewhere.

❑ Return to main document.