Abstracts

Fast and accurate analysis of waveguide filters by the coupled-integral-equations technique

S. Amari, J. Bornemann and R. Vahldieck. "Fast and accurate analysis of waveguide filters by the coupled-integral-equations technique." 1997 Transactions on Microwave Theory and Techniques 45.9 (Sep. 1997 [T-MTT]): 1611-1618.

The coupled-integral-equations technique (CIET) is successfully applied to accurately determine the frequency response of waveguide filters in a single step. A four-resonator H-plane filter is analyzed by the mode-matching technique (MMT) and the CIET for comparison and results in a reduction of central-processing-unit (CPU) time of the order of 400. A set of CIE's for the tangential electric fields at the apertures of the discontinuities are derived and solved by the moment method. Basis functions, which include the edge conditions at each of the discontinuities, are used to achieve numerical efficiency. It is shown that 1-4 basis functions, which include the edge conditions, are sufficient over a broad range of frequencies. The inclusion of the edge conditions in the basis functions is shown to have a dramatic effect on the convergence of the CIET, especially for narrow-band filters.

❑ Return to main document.