Abstracts

Moment-method analysis of arbitrary 3-D metallic N-port waveguide structures

R. Bunger and F. Arndt. "Moment-method analysis of arbitrary 3-D metallic N-port waveguide structures." 2000 Transactions on Microwave Theory and Techniques 48.4 (Apr. 2000, Part I [T-MTT]): 531-537.

Moment-method analysis of arbitrarily shaped perfectly conducting ("metallic") waveguide structures with N waveguide ports is presented that is based on the free-space Green's function. Utilizing the Kirchhoff-Huygens principle, the problem is formulated in terms of the electric-field integral equation. The eigenvectors of the waveguide port sections and the Rao-Wilton-Glisson functions for triangular patches are used as basis functions for the magnetic and electric surface current densities, respectively. The accuracy of the method is verified by measurements or reference values. Its versatility is demonstrated at several design examples of practical interest, such as a lateral coax-fed waveguide, a twisted waveguide, and a waffle-iron filter with round teeth.

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