Abstracts

Modeling Discontinuities in Dielectric-Loaded Waveguides

K.A. Zaki, S.-W. Chen and C. Chen. "Modeling Discontinuities in Dielectric-Loaded Waveguides." 1988 Transactions on Microwave Theory and Techniques 36.12 (Dec. 1988 [T-MTT] (1988 Symposium Issue)): 1804-1810.

The mode-matching technique is applied to model step discontinuities in dielectric-loaded cylindrical waveguide excited by hybrid modes. It is shown that the solution for the fields obtained by mode matching does not converge unless complex modes are included in the field expansion, If the structure parameters and operating frequency allow for the existence of complex modes, then the purely propagating and evanescent mode fields do not form a complete set, unless complemented by the complex mode fields. Numerical results are presented that clearly illustrate the role of the complex mode fields in the modeling of step discontinuities. Examples are included illustrating the representation of the step discontinuities by a multiport scattering matrix.

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