Abstracts

Modeling Multiport Using a Three-Dimensional Coupled Analytical/Finite Element Method Application to Microwave Characterization of Material

D. Aregba, J. Gay and G. Maze-Merceur. "Modeling Multiport Using a Three-Dimensional Coupled Analytical/Finite Element Method Application to Microwave Characterization of Material." 1994 Transactions on Microwave Theory and Techniques 42.4 (Apr. 1994, Part I [T-MTT]): 590-594.

This paper addresses a general method of analysing the propagation in multiports with a perturbed area (which can be a sample of anisotropic material for example) and computation of the scattering parameters. To this end, the electromagnetic fields in the perturbed area are expressed by a finite element formulation, and are connected to those in the accesses of the multiport, expressed as an eigenmode expansion. To give a specific example, this method is applied to the characterization of a biaxial material in a rectangular waveguide, and in a circular coaxial line. In the first case, the obtained results are compared to analytical results and in the later to experimental results. In both cases, a close correlation can be observed.

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