Abstracts

Application of Perturbation Theory to Toroidal Ferrite Phase Shifters

B. Lax and J. Pehowich. "Application of Perturbation Theory to Toroidal Ferrite Phase Shifters." 1991 Transactions on Microwave Theory and Techniques 39.12 (Dec. 1991 [T-MTT] (1991 Symposium Issue)): 2198-2203.

A new application of perturbation formalism is developed to solve for the phase shift of inhomogeneously loaded waveguides containing ferrite toroids with dielectric inserts. The nonreciprocal differential phase shift is derived explicitly for single and double toroidal phase shifters and agrees with experiment over a broad band of frequencies. The formalism that can take into account the coupling of higher order modes to the fundamental mode by the geometrical inhomogeneities and tensor properties of the ferrite is described. The theory can also be used to evaluate the impedances over a broad bandwidth.

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