Abstracts

Anisotropic Slabs in Rectangular Waveguides

F.E. Gardiol. "Anisotropic Slabs in Rectangular Waveguides." 1970 Transactions on Microwave Theory and Techniques 18.8 (Aug. 1970 [T-MTT]): 461-467.

The problem of electromagnetic wave propagation in a rectangular waveguide containing anisotropic slabs was considered by several authors. Their treatments, however, only cover particular cases (lossless media, TE/sub m0/ modes); they do not provide all the information required for the design of microwave devices such as ferrite isolators, which are still developed by empirical methods. The treatment presented here brings closer together the basic theory and the actual design work. A rectangular waveguide having any number of linear anisotropic and isotropic lossy slabs extending across it, is considered. It is shown that an exact solution for the fields of all the modes can be obtained when the material properties meet certain requirements. A matrix formalism is used to derive the dispersion relations, which are then solved with the help of a computer program. Experimental results show good agreement with the computed values.

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