Abstracts

Propagation of Waves through Magnetoplasma Slab within a Parallel-Plate Guide

H.-C. Chang, S.-K. Jeng, R.-B. Wu and C.H. Chen. "Propagation of Waves through Magnetoplasma Slab within a Parallel-Plate Guide." 1986 Transactions on Microwave Theory and Techniques 34.1 (Jan. 1986 [T-MTT]): 32-37.

By applying the variational equation is established for handling wave reaction theory, a variational propagation in a parallel-plate guide within which a magnetized inhomogeneous lossy plasma slab is inserted. The equation is then solved by the finite-element method along with the frontal solution algorithm. With such an approach, the reflection coefficient and the field distribution in the slab are obtained. In this study, the factors which may influence the propagation characteristics of the guide are studied. These factors include the plasma electron density, the strength and the direction of the static magnetic field, the width and the thickness of the slab, and the electron collision Iosses. A special modal expansion solution is also incorporated to investigate an anomalous numerical instability associated with the present numerical algorithm.

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