Abstracts

Magnetostatic Waves in a Normally Magnetized Waveguide Structure (1987 Vol. II [MWSYM])

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In this paper, the propagation of magnetostatic waves (MSW) in a normally magnetized low-loss ferrite slab (such as a yttrium iron garnet (YIG) slab), placed inside a waveguide is investigated theoretically. This case has not been studied before, and is analyzed here for the first time. The ferrite slab is placed inside and along the waveguide in contact with the two side walk. The external dc magnetic field is assumed to be perpendicular to the plane of the ferrite slab (see Fig. 1). A dispersion relation for the modes of propagation in terms of an infinite determinant can be obtained. With proper truncation procedures, sample numerical calculations for dispersion relations and group time delay per unit length were obtained and are presented hereforth. The general formulation in this paper contains all the information provided by the degenerate cases previously published. One special case of interest, i.e., that of a multilayer planar structure, is derived from our general formulation. The derivation of other special cases follow the same procedure.

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