Abstracts

Evaluation of Loss Factor of Multilayered Inhomogeneous Waveguides for Magnetostatic Waves Using Efficient Finite Element Formalism

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An efficient finite element solution procedure is developed for calculating propagation losses of magnetostaticwaves in multilayered inhomogeneous waveguides. The final matrix equation is reduced to a standard complex eigenvalue problem whose eigenvalue corresponds to the complex phase constant itself. Thus, iteration procedures are not necessary and the phase and attenuation constants can be directly obtained by solving a standard eigenvalue equation. The validity of the method is confirmed by calculating propagation losses of magnetostatic surface waves in a single YIG-film structure. Numerical results for a triple-layered YIG-film structure are also presented. It is found that in the triple-layered structure, propagation losses are highly dependent on the line width of the film in which the magnetostatic potential is well confined.

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