Abstracts

Wave propagation in heterogeneous anisotropic magnetic materials

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In order to examine guided wave propagation in unsaturated magnetized materials, it seems reasonable to consider an alternation of layers with antiparallel magnetization in a rectangular waveguide. This approach is coherent with Schlomann's model which considers partially magnetized ferrites as an alternation of antiparallel coaxial cylinders. The finite-difference time-domain (FDTD) method had been used in the case of an homogeneously filled rectangular waveguide. It is adapted here to a guide partially filled with two antiparallel magnetization layers. The modification of the FDTD algorithm at the air/ferrite and ferrite/ferrite interfaces is presented. Results are compared with the ones obtained by a mode-matching technique.

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