Abstracts

Finite-Difference Time-Domain analysis of microwave ferrite devices

B.S. Yildirim and E.-B. El-Sharawy. "Finite-Difference Time-Domain analysis of microwave ferrite devices." 1997 MTT-S International Microwave Symposium Digest 2. (1997 Vol. II [MWSYM]): 1113-1116.

Finite-Difference Time-Domain Method is extended to gyromagnetic media using a time domain approach by solving Maxwell's curl equations and equation of motion of the magnetisation vector in consistency. New update equations are derived to include finite size ferrite material magnetized in a general direction. New code includes non-uniform magnetization due to demagnetization effects as well. In order to validate our formulation, a full wave analysis of a thin film isolator is performed in 3D. Numerical results are then compared with measurements and a good agreement has been achieved. The method presented in this paper can be applied for other microwave ferrite devices such as circulators and phase shifters.

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