

## FDTD Analysis of Magnetized Ferrites: An Approach Based on the Rotated Richtmyer Difference Scheme

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Electromagnetic wave propagation in magnetized ferrites is modelled by solving Maxwell's time-dependent curl equations coupled with the equation of motion of the magnetization vector. A discretization approach based on the rotated Richtmyer finite-difference scheme is proposed. The new approach has been used to calculate the phase constants of transversally magnetized ferrite-loaded waveguides. The numerical dispersion equation for TE/<sub>n0</sub>/ modes is derived. The results obtained with this approach for a ferrite-filled and a ferrite-slab loaded waveguide are compared with those obtained with Yee's scheme extended for the treatment of ferrites and with the exact results.

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