

In this paper, the use of a reference rotating around the axis of magnetization, with the resonance frequency  $\gamma H_0$  ( $\gamma$  is the gyromagnetic ratio and  $H_0$  is the applied magnetic field), allows reducing the number of equations and fields needed for the time-domain analysis of magnetized ferrites compared with the usual case, where a fixed reference is used. The finite-difference time-domain method is used to implement the obtained equations for the analysis of some guiding structures. Numerical results show good agreement with those obtained using the equations of the fixed reference, with an improvement in the efficiency of the simulation.