# Abstracts

## New consistent model for ferrite permeability tensor with arbitrary magnetization state

*P. Gelin and K. Berthou-Pichavant. "New consistent model for ferrite permeability tensor with arbitrary magnetization state." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part I [T-MTT]): 1185-1192.*

Partially magnetized ferrites play an important role in a large class of microwave devices. For instance, when the optimal design of circulators, which operate with ferrite in the low magnetic field region, and other ferrite devices (phase shifters, isolators, etc.) are considered, permeability tensor is required for arbitrary magnetization. The existing models do not simultaneously provide all tensor components, and their validity domain is limited. The proposed model provides integral expressions for all permeability tensor components, which can be treated numerically without difficulties. The physical nature of the model enforces the causal aspect that is required when numerical time-domain methods (such as finite-difference time domain (FDTD), transmission-line matrix (TLM), time-domain finite-element method (TDFEM), etc.) are used. Finally, the comparison with measurements or specific cases, which can be treated by available models, demonstrates the validity of the proposed approach.

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