Abstracts

FEM-based reduced-order model for steady-state skin-effect analysis in lossy lines

F. Bertazzi, F. Carbonera, M. Goano and G. Ghione. "FEM-based reduced-order model for steady-state skin-effect analysis in lossy lines." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2025-2028 vol.3.

A quasi-static finite element technique is proposed for the accurate and efficient computation of the frequency-dependent characteristic parameters or lossy transmission lines having electrodes of arbitrary cross-section on multi-layered, planar or non-planar substrates. A novel formulation of the magneto-quasi-static problem is combined with a robust fast frequency-sweep technique based on the numerical generation of problem-matched basis functions. The proposed technique enables to accurately model the frequency-dependent penetration of electromagnetic fields inside lossy conductors with a reduced set of problem-specific functions. Extensive comparisons are provided between state-of-the-art full-wave finite element method and the present technique: excellent agreement is demonstrated with the full-wave solution, at a fraction of its computational cost.

❑ Return to main document.