Abstracts

Scattering and absorption by thin metal wires in rectangular waveguide-FDTD simulation and physical experiments

M. Bingle, D.B. Davidson and J.H. Cloete. "Scattering and absorption by thin metal wires in rectangular waveguide-FDTD simulation and physical experiments." 2002 Transactions on Microwave Theory and Techniques 50.6 (Jun. 2002 [T-MTT]): 1621-1627.

The high-frequency internal impedance model of a round ohmic conductor is incorporated into the subcell thin-wire formulation of the finite-difference time-domain method to model the microwave properties of metal wires. For magnetic metals, such as steel, an effective conductivity is introduced to account for the increase in ohmic loss due to the high-frequency permeability. Physical experiments with half-wave resonant copper- and steel-wire inclusions, supported by a dielectric slab in a standard S-band rectangular waveguide, support the formulation.

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