Abstracts

Properties of NRD-Guide and H-Guide Higher-Order Modes: Physical and Nonphysical Ranges (Dec. 1994, Part II [T-MTT])

C. Di Nallo, F. Frezza, A. Galli, P. Lampariello and A.A. Oliner. "Properties of NRD-Guide and H-Guide Higher-Order Modes: Physical and Nonphysical Ranges (Dec. 1994, Part II [T-MTT])." 1994 Transactions on Microwave Theory and Techniques 42.12 (Dec. 1994, Part II [T-MTT] (1994 Symposium Issue)): 2429-2434.

New, interesting modal properties are presented for the waveguiding structure consisting of a rectangular-section dielectric rod sandwiched between parallel conducting plates, which can represent either a nonradiative dielectric (NRD) guide or an H guide. A rigorous quantitative analysis of the dispersion properties, making use of both wavenumber and steepest-descent plots, indicates that higher-order modes can show different anomalous behaviors, as geometrical and electromagnetic parameters vary. A discussion of the physical nature of the waves related to complex wavenumbers allows us to illuminate the performance differences between NRD and H guides, as regards certain previously unexplored leakage effects.

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