Abstracts

Simultaneous Propagation of Bound and Leaky Dominant Modes on Printed-Circuit Lines: A New General Effect (Dec. 1995, Part II [T-MTT])

H. Shigesawa, M. Tsuji and A.A. Oliner. "Simultaneous Propagation of Bound and Leaky Dominant Modes on Printed-Circuit Lines: A New General Effect (Dec. 1995, Part II [T-MTT])." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 3006-3018.

We were the first to report that both the bound and leaky dominant modes can propagate simultaneously on conductor-backed coplanar strips over a frequency range. We have recently studied this interesting and initially unexpected effect in more detail, and we have made two important discoveries: First, the simultaneous-propagation effect can actually occur on most, if not all, printed-circuit transmission lines (its presence depending on the relative line dimensions), so that, contrary to earlier belief, the effect is rather general. Second, we have discovered the surprising presence of a new improper (or nonspectral) real solution, which is nonphysical but whose evolution as a function of dimensional change serves to explain how the simultaneous-propagation effect can occur. The new solution, and its behavior in a completely nonphysical region, thus governs otherwise-mysterious large changes in the physical, measurable solutions.

❑ Return to main document.