Abstracts

Ray Methods for Trapped and Slightly Leaky Modes in Multilayered or Multiwave Regions

S.J. Maurer and L.B. Felsen. "Ray Methods for Trapped and Slightly Leaky Modes in Multilayered or Multiwave Regions." 1970 Transactions on Microwave Theory and Techniques 18.9 (Sep. 1970 [T-MTT]): 584-595.

Ray-optical techniques presented previously by the authors for study of mode propagation in homogeneously filled waveguides are extended to accommodate multilayered regions and regions capable of supporting multiple wave species. Emphasis is placed on a self-consistent ray treatment which illustrates alternative methods for dealing with ray coupling at boundaries and with the presence of multiple wave types, either in a single layer or in adjacent regions. Both closed and open structures are analyzed, with discussion of the latter limited to modes with small leakage due either to duct inhomogeneities or to curvature. Examples include layered dielectric waveguides with a straight or circular axis, and compressible plasma waveguides which are illustrative of media wherein two wave species (electromagnetic and electroacoustic) can propagate.

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