Abstracts

Waveguide Power-Mode Theorems for Nonconservative Systems

P. Chorney and P. Penfield, Jr.. "Waveguide Power-Mode Theorems for Nonconservative Systems." 1971 Transactions on Microwave Theory and Techniques 19.9 (Sep. 1971 [T-MTT]): 767-772.

The waveguide power-mode theorems derived earlier apply to lossless passive waveguide systems. These theorems are now extended in three ways. First, nonconservative (e.g., lossy or active) systems are treated. Second, the theorems are generalized to account for complex frequency. Third, plasmas and relativistic electron beams are included by considering the mechanical equations of this "medium" explicitly. It is found that in general, the propagation constants, attenuation constants, real power, and reactive power can all be interrelated. The pseudo-energy terms in general are complex.

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