Abstracts

On the Theory of Strongly Coupled Cavity Chains

M.A. Allen and G.S. Kino. "On the Theory of Strongly Coupled Cavity Chains." 1960 Transactions on Microwave Theory and Techniques 8.3 (May 1960 [T-MTT]): 362-372.

A chain of identical cavity resonators coupled together through slots in their common walls forms a band-pass microwave filter. The pass band characteristics of such a system are determined by a combination of field theory and circuit theory. The fields in the cavities are expressed in terms of the normal modes of the uncoupled cavities. The fields in the neighborhood of a slot are determined by representing the slot as a transmission line. Irrotational components of the field in the cavities account for direct slot-to-slot coupling. The method successfully predicts both the dispersion characteristics and field distributions over large frequency ranges for many practical systems, such as slow-wave circuits for high-power traveling-wave tubes.

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