

Abstracts

Method of Synthesizing Nonuniform Waveguides

*K. Gruner. "Method of Synthesizing Nonuniform Waveguides." 1974 *Transactions on Microwave Theory and Techniques* 22.3 (Mar. 1974 [T-MTT] (Special Issue on Computer-Oriented Microwave Practices)): 317-322.*

A method is proposed for the synthesis of continuous nonuniform waveguides with rectangular cross section so that they show desired electromagnetic properties for discrete frequencies when excited by the TE₁₀₁ mode. Starting from a uniform structure with known properties, the shape of the nonuniform waveguide is attained step by step by small systematic deformations. To show the feasibility of the method proposed, the mathematical formalism and numerical results are presented for reactive one-ports and filters with simple properties. In these cases, the problem is reduced to the solution of an equivalent resonator problem, i.e., a nonuniform waveguide resonator is developed for which a certain set of resonance modes occur at desired frequencies.

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