Abstracts

Mode Coupling in Coaxial Waveguides with Varying-Radius Center and Outer Conductors

J. Shafii and R.J. Vernon. "Mode Coupling in Coaxial Waveguides with Varying-Radius Center and Outer Conductors." 1995 Transactions on Microwave Theory and Techniques 43.3 (Mar. 1995 [T-MTT]): 582-591.

The mode conversion process in a coaxial waveguide with varying-radius center and outer conductors is shown to be described by a system of first-order differential equations--the coupled mode equations. The nondiagonal coefficients of this system are called the coupling coefficients. In this paper, we derive the explicit expressions for the coupling coefficients in a varying-radius coaxial waveguide and discuss some of their important features. These coefficients can be used in determining model conversion in a coaxial cavity with slowly varying walls or designing and analyzing coaxial waveguide tapers and mode converters. Some experimental results of the coupling coefficients for the case of azimuthally symmetric modes, TE/sub 0n/ modes, are also given.

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