Abstracts

Fields in Waveguide Bends Expressed in Terms of Coupled Local Annular Waveguide Modes

E. Bahar. "Fields in Waveguide Bends Expressed in Terms of Coupled Local Annular Waveguide Modes." 1969 Transactions on Microwave Theory and Techniques 17.4 (Apr. 1969 [T-MTT]): 210-217.

The fields in waveguide bends with arbitrary curvature and cross section are expressed in terms of "local" annular modes. The coupling between the local mode amplitudes is derived by evaluating the differential scattering coefficients between two adjacent infinitesimal annular waveguides. Comparison of these solutions with an earlier analysis of the problem shows that the coupling terms for the local annular modes are smaller for gradually curved bends since they are proportional to the derivative of the curvature. Furthermore, the significant scattered annular modes are bunched more tightly about the incident mode. The coupled differential equations for the annular mode amplitudes may therefore be solved by considering relatively fewer scattered modes.

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