Abstracts

Fundamental Mode Propagation on Dielectric Fibers of Some Noncircular Cross Sections

E.F. Kuester and R.C. Pate. "Fundamental Mode Propagation on Dielectric Fibers of Some Noncircular Cross Sections." 1979 MTT-S International Microwave Symposium Digest 79.1 (1979 [MWSYM]): 475-477.

The behavior of the propagation constants of the fundamental modes on dielectric fibers of arbitrary crossection is studied by a variational formulation of the integral equation for the modal electric field. An approximate eigenvalue equation is obtained which involves functions defined as series expansions easily and accurately evaluated by computer, into which the cross-sectional shapes enter only through a set of constants calculated ahead of time. These constants are calculable analytically for elliptical, polygonal, and several other shapes, and used to obtain dispersion curves which compare favorably in the single-mode regime with results for rectangular, elliptical and triangular cores computed by other methods.

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