Abstracts

Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results

The application of symmetry analysis to uniform waveguides is discussed. Symmetry analysis provides exact information concerning mode classification, mode degeneracy, modal electromagnetic-field symmetries, and the minimum waveguide sectors which completely determine the modes in each mode class. Tables are presented which list the possible mode classes and their degeneracies for the two general symmetry families, C_n and C_{nv}, of uniform waveguides. Tables showing the azimuthal dependence of the longitudinal components of the electric and magnetic fields for each mode class are given. Based on this azimuthal dependence, figures showing the minimum waveguide sectors which are necessary and sufficient to completely determine the modes of the various mode classes are presented. The application of symmetry analysis is illustrated by considering uniform waveguides with C_4 and C_{6v} symmetry.

❑ Return to main document.