Abstracts

The higher order modal characteristics of circular-rectangular coaxial waveguides

Haiyin Wang, Ke-Li Wu and J. Litva. "The higher order modal characteristics of circular-rectangular coaxial waveguides." 1997 Transactions on Microwave Theory and Techniques 45.3 (Mar. 1997 [T-MTT]): 414-419.

A rigorous analysis combining the orthogonal expansion method and Galerkin method for the higher order eigenmodes in a circular-rectangular (C-R) waveguide is presented in this paper. The Bessel-Fourier series is employed to merge the circular and rectangular coordinate systems used in the analysis. The cutoff frequencies of the higher order modes are determined with the singular value decomposition (SVD) technique. The computed results are in excellent agreement with results obtained using the finite element method. Because of its analytic form, the solution will be useful in the rigorous analysis of many practical microwave components and circuits.

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