# Abstracts

## Complete Eigenvalue Analysis of Inhomogeneously Dielectric Loaded Two Conductor Guiding Structures (Short Papers)

*M.Z. Mohamed and J.M. Jarem. "Complete Eigenvalue Analysis of Inhomogeneously Dielectric Loaded Two Conductor Guiding Structures (Short Papers)." 1993 Transactions on Microwave Theory and Techniques 41.3 (Mar. 1993 [T-MTT]): 536-539.*

A complete full-wave eigenvalue analysis is presented for inhomogeneously filled guiding structures that support TEM mode. The analysis is based on treating the transverse inhomogeneity of the tilling dielectric as a polarization current that excites the corresponding empty guiding system. The problem is formulated to determine the quasi-TEM and higher order modes of the system. The mode propagation constants squared appear as eigenvalues of the problem, and the corresponding eigenvectors represent the expansion coefficients of the field modes. The strength of the formulation is verified by its application to the problem of the partially dielectric-filled parallel-plate waveguide. The results of the analysis are compared to the exact solution and a variational solution. The quasi-TEM mode variation versus permittivity and frequency variation is studied. The convergence and dispersion characteristics of the method are presented.

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