# Abstracts

## Scattering by Abrupt Discontinuities on Planar Dielectric Waveguides

*G.H. Brooke and M.M.Z. Kharadly. "Scattering by Abrupt Discontinuities on Planar Dielectric Waveguides." 1982 Transactions on Microwave Theory and Techniques 30.5 (May 1982 [T-MTT]): 760-770.*

Two unifying aspects of the problem of scattering by an abrupt discontinuity on a planar dielectric waveguide are considered. The first aspect is concerned with the numerical solution of the scattering problem through consideration of a corresponding bounded waveguide problem in which perfect electric or magnetic conductor bounds with variable locations are introduced. It is shown that the solutions to the bounded problem, when numerically integrated over a range of bound locations defined within half a wavelength, allow the complete mode spectra of the unbounded waveguide to be accurately accounted for. Scattering solutions for both TE- and TM-modes are presented for a wide range of discontinuities and, in the TE-mode case, are in agreement with results obtained using the method due to Rozzi. The second aspect is concerned with the relationship between scattering and "inter-waveguide mode orthogonality." Based on a simple iterative scheme, a meaningful physical interpretation of the scattering process is developed. This allows the scattering to be classified as being of first or higher order, to be explained in terms of the physical characteristics of the mode fields.

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