# Abstracts

## Hybrid-mode analysis of multilayered and multiconductor transmission lines

*M.S. Alam, M. Koshiba, K. Hirayama and Y. Hayashi. "Hybrid-mode analysis of multilayered and multiconductor transmission lines." 1997 Transactions on Microwave Theory and Techniques 45.2 (Feb. 1997 [T-MTT]): 205-211.*

Hybrid-mode propagation properties of multilayered and multiconductor transmission lines are studied by using an efficient vector finite element method (FEM) with high-order hybrid edge/nodal triangular elements, which can give frequency-dependent propagation constants directly. Characteristic impedances are also calculated from the FEM field solutions employing a reciprocity-related definition and taking the modal orthogonality into account. The numerical results of a coupled microstrip line are compared with those of the boundary integral equation technique, and good agreement is obtained. Also, a dual-plane triple microstrip line is analyzed. The approach is found to be very general and able to simultaneously handle different thicknesses and widths of strip conductors. The flexibility of the approach is also shown by including anisotropy in the dielectric substrates of such lines.

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