Abstracts

Study of Microstrip Step Discontinuities on Bianisotropic Substrates Using the Method of Lines and Transverse Resonance Technique

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A hybrid approach, combining the method of lines (MoL) and transverse resonance technique (TRT), is presented for the analysis of microstrip step discontinuities that are printed on uniaxial or biaxial bi-anisotropic substrates. The method of lines, formulated in terms of Kronecker products, is used to determine the characteristic equation for the resonant length. The transverse resonance technique is applied to obtain the S-parameters of the junction by casting the discontinuity problem as a microwave equivalent network. Good agreement is found between results of the MoL/TRT approach and those obtained by other methods. Effects of individual tensor elements of the substrate on the scattering parameters of the discontinuity are investigated at selected frequencies. The proposed MoL/TRT approach is found to converge very fast and does not require excessive computer memory, with all computations performed on a 486DX-50 MHz PC.

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