Abstracts

Efficient and accurate modeling of planar anisotropic microwave structures by the method of lines

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A new algorithm for the analysis of planar microwave structures with anisotropic substrates is proposed and substantiated. This algorithm is based on generalized transmission-line (GTL) equations, which are developed here for numerical algorithms. For the purpose of analysis, two different modal matrices for the discretized transverse electric and magnetic fields are calculated. Furthermore, impedance/admittance transformation formulas are developed with the help of the GTL equations for longitudinal sections and general junctions. Crossed discretization lines are used in the latter case. The materials are assumed to be biaxial or specific anisotropic. Special algorithms are developed for junctions consisting of more than two waveguides in the cross section and for bends. The proposed algorithm is verified by numerical results.

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