# Abstracts

## An improved multigrid technique for quasi-TEM analysis of a microstrip embedded in an inhomogeneous anisotropic medium

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An improved multigrid technique for the quasi-TEM analysis of a microstrip line embedded in an inhomogeneous anisotropic dielectric medium is presented. A general finite-difference form for the inhomogeneous anisotropic medium is derived by the finite-volume discretization of Gauss's theorem. By the analogy between the quasi-TEM and the steady current problems, this general form can be interpreted by Kirchhoff's current law. Then, the electric potential distribution in this complicated dielectric structure can be regarded as that on a resistive network, which makes the formulation easier. The resulting matrix equation for the potential distribution on the finest grid is solved by the improved multigrid iteration, where the coarse-grid operator is derived directly from the finest grid operator by the help of an equivalent resistive network. Three numerical examples show that the convergence rate is hardly dependent of the number of unknowns and the complexity of the dielectric media. Moreover, the numerical results are in good agreement with those by the other method when special cases are considered.

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