Abstracts

Diagonalization of Difference Operators and System Matrices in the Method of Lines

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In the method of lines, the eigensolutions for the difference operator for the electric field can be calculated from the corresponding eigensolutions for the magnetic field. For an arbitrary discretization of a homogeneous layer it is proved that this is achieved by a simple matrix multiplication, which yields numerical advantages, especially in the cases of nonequidistant discretization or absorbing boundaries. Secondly, a transformation to principal axes of the system matrices for multilayered planar structures is given which enables an easier transfer of the field components from one layer interface to the other. The result corresponds to that of the immittance approach in the spectral-domain method.

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