Abstracts

Method of Moments Analysis of Anisotropic Artificial Media Composed of Dielectric Wire Objects

M.E. Peters and E.H. Newman. "Method of Moments Analysis of Anisotropic Artificial Media Composed of Dielectric Wire Objects." 1995 Transactions on Microwave Theory and Techniques 43.9 (Sep. 1995, Part I [T-MTT]): 2023-2027.

The paper considers the periodic method of moments (PMM) analysis of anisotropic artificial media composed of a 3D periodic array of identical scatterers. The method is based upon finding the complex wavenumber(s), and the eigenfunction currents and fields, for a plane wave propagating in the artificial medium. From these quantities, the effective tensor constitutive parameters are determined. It is shown that for a given direction of propagation through an artificial medium, there are two distinct modes of plane wave propagation, which may change with the direction of propagation. Examples are shown for the case where the periodic scatterers are thin dielectric wire structures.

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