Abstracts

Electromagnetic Wave Propagation in Twisted Anisotropic Media

The complete solution of the differential equation describing the propagation of plane uniform TEM waves along the twist axis of a twisted anisotropic medium with a constant rate of twist is shown to be of exponential type, consisting of two identical pairs of independent propagation modes, each pair being associated with a particular direction of energy flow. Knowledge of the complete solution is used to solve the boundary value problem relative to wave penetration into a twisted medium at normal incidence, a numerical example being given illustrating the polarization transformation properties of the medium near the short wavelength limit. Analysis of mode properties reveals circnlar birefringence should occur in twisted media at long wavelengths. A link power, as shown by certain crystalline substances provided by the theory.

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