Abstracts

The Green's Dyadic for Radiation in a Bounded Simple Moving Medium

Y.J. Seto. "The Green's Dyadic for Radiation in a Bounded Simple Moving Medium." 1967 Transactions on Microwave Theory and Techniques 15.8 (Aug. 1967 [T-MTT]): 455-462.

The studies here show that the wave equation for electromagnetic wave propagation in an isotropic and uniformly moving medium is solvable by the separation method in four coordinate systems. Solutions in the form of complete sets of eigenfunctions are possible for problems where boundary surfaces are presented. A Green's dyadic for finite or semi-infinite domain problems involving sources in the moving medium has been formulated through vector operation on the eigenfunction solutions of the homogeneous wave equation. The case of electromagnetic waves excited by a current loop, immersed in a moving medium, and confined by a circular cylindrical waveguide, was examined. The electric and magnetic field intensities in such a waveguide were compared with those obtained through a different approach. The Green's dyadic for electromagnetic waves in an infinite domain moving medium was shown to be obtainable from the finite domain Green's dyadic through a limiting process.

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