Abstracts

Three-Dimensional Electromagnetic Scattering from Inhomogeneous Objects by the Hybrid Moment and Finite Element Method

X. Yuan. "Three-Dimensional Electromagnetic Scattering from Inhomogeneous Objects by the Hybrid Moment and Finite Element Method." 1990 Transactions on Microwave Theory and Techniques 38.8 (Aug. 1990 [T-MTT]): 1053-1058.

The hybrid moment and finite element method is used to obtain 3-D scattering and/or absorption from inhomogeneous, arbitrarily shaped objects. The surface of the object is approximated by triangles and the volume of the object is approximated by tetrahedrons. The electrical parameters are assumed constant in each tetrahedron. The Galerkin testing procedure is used. To avoid contaminations of spurious mode, a divergenceless vector basis function is used in finite elements. The calculated internal field and scattered field for a homogeneous sphere, a layered sphere, and a lossy prolate spheroid are compared with Mie series solutions and other numerical techniques. The accuracy and rate of convergence of the solution are discussed.

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