Abstracts

A Procedure for Calculating Fields Inside Arbitrarily Shaped, Inhomogeneous Dielectric Bodies Using Linear Basis Functions with the Moment Method

C.-T. Tsai, H. Massoudi, C.H. Durney and M.F. Iskander. "A Procedure for Calculating Fields Inside Arbitrarily Shaped, Inhomogeneous Dielectric Bodies Using Linear Basis Functions with the Moment Method." 1986 Transactions on Microwave Theory and Techniques 34.11 (Nov. 1986 [T-MTT]): 1131-1139.

A moment method for calculating the internal field distributions of arbitrarily shaped, inhomogeneous dielectric bodies is presented. A free-space Green's function integral equation is used with 3-D linear basis functions to describe the field variation within cells. Polyhedral volume elements are used to model the scatterer's curvature realistically without an excessive number of unknowns. A new testing procednre, called the modified Galerkin's method, is developed and used to obtain the matrix equations with less CPU time but greater accuracy. Calculated internal field distributions of dielectric spheres, spheroids, and a composite model of a rat are compared with other calculations and experimental data. The agreement is generally good.

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