

Abstracts

Analysis of the Scattering by Dielectric Bodies Using the SIE Formulation

A. Jostingmeier and A.S. Omar. "Analysis of the Scattering by Dielectric Bodies Using the SIE Formulation." 1994 *Transactions on Microwave Theory and Techniques* 42.3 (Mar. 1994 [T-MTT]): 471-480.

A surface integral equation (SIE) formulation is derived in order to analyze the scattering by a homogeneous dielectric body inside a cavity to which cylindrical waveguides are coupled. Cavity and dielectric body may be arbitrarily shaped; the waveguides may be of arbitrary cross section. Completely closed dielectric-loaded cavities and structures containing metal inserts or magnetic conductors are considered as well. It is shown that the SIE formulation reduces a field problem by one dimension leading to highly efficient algorithms. From numerical results, the influence of surface current expansions is studied. The accuracy of the method is demonstrated by field plots and by the comparison of numerical results to those of other methods.

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