Abstracts

A New Electric Field Integral Equation for Heterogeneous Dielectric Bodies of Revolution (Short Papers)

M.S. Viola. "A New Electric Field Integral Equation for Heterogeneous Dielectric Bodies of Revolution (Short Papers)." 1995 Transactions on Microwave Theory and Techniques 43.1 (Jan. 1995 [T-MTT]): 230-233.

In this paper, a novel electric field integral equation (EFIE) is developed for rotationally-symmetric heterogeneous dielectric bodies. This EFIE has several attractive features. Firstly, the azimuthal field component has been eliminated in this formulation thereby reducing the number of scalar unknowns from three to two. Secondly, it is a pure-integral equation in which there are no terms involving derivatives of the field components. Finally, this description is devoid of any highly singular kernel which would require a principal-value evaluation of the associated integral. These attributes render this formulation advantageous for both computational and theoretical pursuits.

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