Abstracts

The Importance of the Surface Divergence Term in the Finite Element-Vector Absorbing Boundary Condition Method (Short Papers)

V.N. Kanellopoulos and J.P. Webb. "The Importance of the Surface Divergence Term in the Finite Element-Vector Absorbing Boundary Condition Method (Short Papers)." 1995 Transactions on Microwave Theory and Techniques 43.9 (Sep. 1995, Part I [T-MTT]): 2168-2170.

The vector absorbing boundary condition (ABC) is an effective way of truncating the infinite domain of a 3-D scattering problem, and thereby permitting its solution with a finite element method. One of the terms of the ABC is a surface divergence term. It is shown that due to its presence, the normal continuity of the field must be enforced on the surface where the ABC is applied. Numerical analysis of scattering by a conducting sphere demonstrates that if normal continuity is not enforced, the maximum error in the near field may more than double. A similar error occurs if the surface divergence term is omitted from the formulation.

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