Abstracts

Improvement to the PML boundary condition in the FEM using mesh compression

A. Mitchell, D.M. Kokotoff and M.W. Austin. "Improvement to the PML boundary condition in the FEM using mesh compression." 2002 Transactions on Microwave Theory and Techniques 50.5 (May 2002 [T-MTT]): 1297-1302.

Numerical errors encountered when using the perfectly matched layer (PML) absorbing boundary condition with the finite-element method are investigated to discover more efficient implementation schemes. Closed-form expressions for the numerical reflection at an interface between two general biaxial materials are applied to the special case of a PML boundary. Expressions for an anisotropically compressed mesh are then derived, revealing that reflections can be greatly reduced through increasing mesh density only where it is required. Significant improvements over previously reported PML boundaries are demonstrated.

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