Abstracts

A fast vector-potential method using tangentially continuous vector finite elements

R. Dyczij-Edlinger, Guanghua Peng and Jin-Fa Lee. "A fast vector-potential method using tangentially continuous vector finite elements." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 863-868.

An efficient finite-element method for driven time-harmonic wave-propagation problems is proposed. The special properties of tangentially continuous vector finite elements (TVFEMs) are utilized to formulate an ungauged vector-potential scheme in terms of the field method plus one very sparse "gradient matrix" with two nonzero integer or pointer entries per row. The suggested formalism is intended for use with iterative solvers. It combines the simplicity and modest memory requirements of the field formulation with the superior numerical convergence of the ungauged vector-potential scheme.

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