Abstracts

Wavelet-Galerkin scheme of time-dependent inhomogeneous electromagnetic problems

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A wavelet-Galerkin scheme based on the time-dependent Maxwell's equations is presented. Daubechies' wavelet with two vanishing wavelet moments is expanded for basis function in spatial domain, and Yee's leap-frog approach is applied. The shifted interpolation property of Daubechies' wavelet family leads to the simplified formulations for inhomogeneous media without the additional matrices for the integral or material operator. The storage effectiveness, execution time reduction, and accuracy of this scheme are demonstrated by calculating the resonant frequencies of the homogeneous and inhomogeneous cavities.

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