Abstracts

A higher-order FDTD using sine expansion function

Jiazong Zhang and Zhizhang Chen. "A higher-order FDTD using sine expansion function." 2000 MTT-S International Microwave Symposium Digest 00.2 (2000 Vol. II [MWSYM]): 1113-1116.

Time-domain methods such as the multiresolution time-domain (MRTD) method have been proven to be an efficient high-order modelling technique for electromagnetic structure problems. In this paper, based on the similar procedure, a MRTD-like finite-difference time-domain method is presented with the use of sine function as the space-domain basis function. The resultant formulations allow easy implementation and computation of expansion coefficients. Stability analysis, dispersion study and the preliminary numerical results indicate that the proposed method is effective and efficient in reducing computational memory and time like MRTD while maintaining the same level of accuracy.

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