Abstracts

FDTD validations of a nonlinear PML scheme

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The finite-difference time-domain (FDTD) method has been applied to nonlinear electromagnetic problems such as nonlinear soliton propagation. However, for practical simulations of open nonlinear media, nonlinear absorbing boundary conditions are needed to truncate the computation domains while not affecting the nonlinear field propagation. In this work, based on the Berenger's PML, we present a nonlinear PML (nPML) for the absorption of nonlinear waves and its validations with the Yee's FDTD scheme. Numerical examples are given and absorption of better than -50 dB has been obtained.

❑ Return to main document.