Abstracts

Hybrid FDTD large-signal modeling of three-terminal active devices

Qiang Chen and V.F. Fusco. "Hybrid FDTD large-signal modeling of three-terminal active devices." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part I [T-MTT]): 1267-1270.

A general algorithm for including large-signal active three-terminal models into the finite-difference time-domain (FDTD) method is presented. A dynamic interface between the active device and the FDTD lattice is used to simulate the prominent nonlinear time-dependant behavior of the three-terminal active device, which is connected across multiple FDTD cells. A technique for introducing an internal electromagnetic (EM) field absorber into the FDTD three-terminal active device model in order to eliminate undesired current coupling is discussed. Numerical comparison shows this method is accurate and expected to have general utility for other complicated hybrid lumped-circuit FDTD modeling situations.

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