Abstracts

Comparison of wavelet- and time-marching-based microwave circuit transient analyses

C.E. Christoffersen and M.B. Steer. "Comparison of wavelet- and time-marching-based microwave circuit transient analyses." 2001 MTT-S International Microwave Symposium Digest 01.1 (2001 Vol. I [MWSYM]): 447-450 vol.1.

In this paper we derive a transient analysis formulation that can be used in conjunction with wavelets or time-marching methods. The number of unknowns in the formulation is proportional to the number of state variables of the nonlinear devices in the circuit. The formulation was implemented in a general-purpose circuit simulator. We evaluate the numerical performance of transient analysis using wavelets and the backward Euler method by simulating a nonlinear transmission line and a quasi-optical grid amplifier. The quasi-optical example illustrates the integration of full-wave electromagnetic analysis in transient circuit simulation.

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