# Abstracts

## Some Considerations for Using the Finite Difference Time Domain Technique to Analyze Microwave Integrated Circuits

*J. Litva, C. Wu, K.-L. Wu and J. Chen. "Some Considerations for Using the Finite Difference Time Domain Technique to Analyze Microwave Integrated Circuits." 1993 Microwave and Guided Wave Letters 3.12 (Dec. 1993 [MGWL]): 438-440.*

In this letter, we described the incorporation of the autoregressive method (AR model) and Litva's dispersive boundary condition (DBC) into the finite-difference time-domain method (FD-TD). It is found that the performance of the FD-TD technique is greatly enhanced when used to simulate microwave passive circuits. The results of this study show that for the analysis of typical high-Q circuits, CPU-time savings of up to 90% can be realized by combining AR model and FD-TD. After testing a number of different 50-ohm microstrip lines, we conclude that DBC shows good performance and gives excellent results when implemented with FD-TD, if the parameters are chosen properly. The use of this boundary condition can result in a considerable improvement in the accuracy of FD-TD simulations. These results help to demonstrate the usefulness of incorporating both the DBC and AR model with the FD-TD algorithm when analyzing practical microwave circuits.

❑ Return to main document.