Abstracts

A Spectral Estimation Technique to Improve the Efficiency of FDTD Method for Narrow-Band Microwave Circuits

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With the advances in computer technology, the finite-difference time-domain (FDTD) method is becoming increasingly popular in the analysis of microwave circuits. A major drawback of the conventional Yee FDTD implementation is the enormous time and memory required to characterize the resonant behavior of narrow-band circuits. In this paper, we introduce a technique which effectively employs a combination of Prony's extrapolation and adaptive sampling of the temporal data to reduce the number of FDTD iterations for resonant circuits. The new technique is applied to the characterization of a multilayered coplanar waveguide filter element.

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