Abstracts

Modeling of Microwave Active Devices Using the FDTD Analysis Based on the Voltage-Source Approach

C.-N. Kuo, R.-B. Wu, B. Houshmand and T. Itoh. "Modeling of Microwave Active Devices Using the FDTD Analysis Based on the Voltage-Source Approach." 1996 Microwave and Guided Wave Letters 6.5 (May 1996 [MGWL]): 199-201.

This letter describes a voltage-source-based formulation of the extended finite-difference time-domain algorithm for the purpose of modeling microwave devices. The device-wave interaction is fully characterized by replacing the lumped devices with equivalent voltage sources in the device region, which in turn generate electromagnetic fields according to Faraday's law. This formulation is applied to the analysis of a typical microwave amplifier, which includes a three-terminal active MESFET device. Simulation results are in good agreement with measured data.

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