Abstracts

An Improved 2D-FDTD Method for TWFET Bandwidth Characterization

C. Angiolini, G. D'Inzeo and P. Rota. "An Improved 2D-FDTD Method for TWFET Bandwidth Characterization." 1995 MTT-S International Microwave Symposium Digest 95.2 (1995 Vol. II [MWSYM]): 789-792.

A new 2D-FDTD method has been proposed to analyze the dispersion diagram of planar circuits. Traveling wave field effect transistor (TWFET) is a solid state device designed to amplify signals over a wide bandwidth. An analysis of the passive behavior of this device has been performed using mode-matching technique and assuming that the passive structure performances are affected only by the width of the T bar of the gate electrode. To verify such hypothesis and to determine the cut-off frequency of the higher order modes that limits its bandwidth, we have simplified the 2D-FDTD method with a particular normalization, that permits the analysis of the case beta=0. The proposed approach was tested calculating the dispersion for some known structures and it has been used in the TWFET characterization.

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