Abstracts

A global modeling approach using artificial neural network

S. Goasguen, S.M. Hammadi and S.M. El-Ghazaly. "A global modeling approach using artificial neural network." 1999 MTT-S International Microwave Symposium Digest 99.1 (1999 Vol. I [MWSYM]): 153-156 vol.1.

We propose a first order global modeling approach of monolithic microwave integrated circuits (MMIC) by modeling the active device with a neural network based on a full hydrodynamic model. This neural network can be implemented in an extended FDTD mesh and predict large signal behavior of the circuits. We successfully represented the drain current with a one hidden layer neural network whose inputs are the gate voltage V/sub gs/ and the drain voltage V/sub ds/. The trained neural network shows excellent accuracy and dramatically reduces the computational time in comparison with the hydrodynamic model.

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