Abstracts

The "Smoothie" data base model for the correct modeling of non-linear distortion in FET devices

V. Cuoco, M.P. van den Heijden and L.C.N. de Vreede. "The "Smoothie" data base model for the correct modeling of non-linear distortion in FET devices." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2149-2152 vol.3.

Currently available data base model implementations fail to correctly model intermodulation products at small to medium signal power levels. In this paper we present the "Smoothie" data base model for FET devices. The model is implemented within Agilent's Advanced Design System (ADS) and is based on the smoothing splines approximation of the device Y-parameters. All four the main functions (i.e. the port currents and charges) are found by analytical integration of the Y-parameters smoothing spline approximations. The use of the smoothing splines approximation compared to the conventional spline interpolation reduces the influence of measurement noise and yields to well behaved continuous higher order derivatives, which are essential in the simulation of circuit linearity. By choosing a proper set of splines control parameters, the user can influence the tradeoff between closeness and smoothness of the approximation. In this work we give an overview of the capabilities of "Smoothie" and compare it to the HP Root data base model.

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