# Abstracts

## A Non-Linear Distributed FET-Model, for Millimeter-Wave Circuit Design by Harmonic Balance Techniques

*E. Ongareau, M. Aubourg, M. Gayral and J. Obregon. "A Non-Linear Distributed FET-Model, for Millimeter-Wave Circuit Design by Harmonic Balance Techniques." 1990 MTT-S International Microwave Symposium Digest 90.1 (1990 Vol. I [MWSYM]): 323-326.*

In this paper, we propose a systematic procedure to derive a non-linear, distributed, FET model, which may be implemented in harmonic balance simulators for non-linear design at millimeter waves. The model is derived from the knowledge of the conventional lumped non-linear equivalent circuit, and the geometrical dimensions of the FET. A FET-finger is modeled by N sliced sections. Each section includes a nonlinear two-port, inserted between two linear four-part. Element-values of the non-linear two-port are derived from the lumped model, by appropriate scaling rules. Element-values of the linear four-port are derived from an electromagnetic analysis of the transverse structure of the FET, which takes into account coupling and distributed effects along the electrodes. The model has been applied to the non-linear analysis of a millimeter-wave FET, and compared to the lumped equivalent circuit.

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