# Abstracts

## Characterizing the gate-to-source nonlinear capacitor role on GaAs FET IMD performance

*J.A. Garcia, A.M. Sanchez, J.C. Pedro, N.B. De Carvalho, A.T. Puente and J.L. Garcia. "Characterizing the gate-to-source nonlinear capacitor role on GaAs FET IMD performance." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2344-2355.*

This paper discusses, in a mathematical form and supported by a complete special experimental characterization, the gate-to-source nonlinear capacitor contribution on small-signal intermodulation distortion (IMD) as well as other nonlinear related phenomena such as the onset of phase distortion and gain compression in GaAs FET devices. A simplified one-sided version of our previously proposed test setup and its corresponding characterization formulation are shown to conform a direct technique to extract the second- and third-order coefficients for the Cgs(Vgs) Taylor-series expansion. The extracted terms let us evaluate some of the most widely employed equations for this reactive nonlinearity according to their capability of reproducing its small-signal nonlinear distortion contribution. They are also shown to be responsible for some previously detected differences on IMD behavior at high frequencies and for significant variations on the load selection criteria for high carrier-to-intermodulation ratio and high output-power tradeoffs.

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