Abstracts

Nonlinear statistical modeling of large-signal device behavior

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A novel technique for modeling the nonlinear statistics of large- and small-signal device model parameters is proposed. It features transformation of individual random variables and introduces a new criterion for optimum statistical variable transformation based on Quantile-Quantile plots. Subsequently, multivariant methods are applied to build an inherently nonlinear statistical model. The models are easily implemented into current CAD tools and are suited to accurately predict yield in the presence of process variations and process shifts. Results for devices and MMIC circuits operated under small- and large signal excitation validate the accuracy of the method.

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