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Markov chain Monte Carlo methods for statistical analysis of RF photonic devices - DTU Orbit (08/11/2017)

Markov chain Monte Carlo methods for statistical analysis of RF photonic devices

The microwave reflection coefficient is commonly used to characterize the impedance of high-speed optoelectronic devices. Error and uncertainty in equivalent circuit parameters measured using this data are systematically evaluated. The commonly used nonlinear least-squares method for estimating uncertainty is shown to give unsatisfactory and incorrect results due to the nonlinear relationship between the circuit parameters and the measured data. Markov chain Monte Carlo methods are shown to provide superior results, both for individual devices and for assessing within-die variation

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