Abstracts

Microwave Device Modeling Using Efficient l/sub 1/ Optimization: A Novel Approach (Dec. 1986 [T-MTT])

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A powerful modeling technique which exploits the theoretical properties of the l/sub 1/ norm is presented. The concept of multicircuit measurements and its advantages for unique identification of parameters are discussed. Self-consistent models for passive and active devices are achieved by an approach that automatically checks the validity of model parameters obtained from optimization. A set of formulas is presented to evaluate the first-order sensitivities of two-port, S-parameters with respect to circuit elements appearing in an admittance or impedance matrix description of linear network equivalents. These formulas are used for devices with linear network models in conjunction with an efficient gradient based l/sub 1/ algorithm. Practical use of the efficient l/sub 1/ algorithm in complicated problems for which gradient evaluation may not be feasible is also discussed. Two different optimization problems are formulated which connect the concept of modeling to physical adjustments on the device. Detailed examples in modeling of multicoupled cavity filters and GaAs FET's are presented.

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