Abstracts

Steady-state determination for RF circuits using Krylov-subspace methods in SPICE

M.A. Kleiner and R.N. Afsar. "Steady-state determination for RF circuits using Krylov-subspace methods in SPICE." 2001 MTT-S International Microwave Symposium Digest 01.3 (2001 Vol. III [MWSYM]): 2091-2094 vol.3.

A SPICE-based direct shooting-Newton method for the determination of the steady-state response of RF circuits has been developed. Different Krylov-subspace methods, including GMRES, CGS, BiCG, QMR, and BiCGSTAB, were used to solve the iterative equations generated by the shooting-Newton algorithm. The public-domain circuit simulator, SPICE, was used for the implementation of the new steady-state analysis. Compared to standard transient analysis for the determination of the steady-state response for non-linear circuits encountered in RF design, this new method is much more efficient. RF circuits that are difficult to simulate are evaluated. For larger circuits, the GMRES, QMR, and BiCGSTAB algorithms show the most improvement in the time to calculate the steady-stale.

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