Abstracts

Fast and robust inexact Newton approach to the harmonic-balance analysis of nonlinear microwave circuits

V. Rizzoli, F. Mastri, C. Cecchetti and F. Sgallari. "Fast and robust inexact Newton approach to the harmonic-balance analysis of nonlinear microwave circuits." 1997 Microwave and Guided Wave Letters 7.10 (Oct. 1997 [MGWL]): 359-361.

The authors discuss a novel approach to nonlinear microwave circuit simulation by the harmonic-balance (HE) technique. The nonlinear system is solved by an inexact Newton method, and the GMRES iteration is used at each step to find a suitable inexact Newton update. The peculiar structure of the Jacobian matrix allows the basis vectors of the Krylov subspace to be computed mostly by the FFT. The resulting simulation tool is fast and robust, and outperforms conventional HE techniques when applied to large-size nonlinear analysis problems.

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