Abstracts

Harmonic-Balance Analysis of Multitone Autonomous Nonlinear Microwave Circuits

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The paper introduces a Newton-iteration based algorithm for the harmonic-balance analysis of autonomous microwave circuits operating in quasi-periodic conditions. The autonomy concept for quasi-periodic regimes is first discussed in detail, and a solution strategy of the harmonic-balance equations based on a mixed-mode Newton iteration is outlined. A method for the exact computation of the Jacobian matrix, including the exact derivatives with respect to the unknown fundamental frequencies, is presented, Finally, the excellent numerical performance of the new simulation tool is demonstrated by the analysis of a DR-tuned self-oscillating mixer.

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