Abstracts

A rigorous frequency-domain approach to large-signal noise in nonlinear microwave circuits

V. Rizzoli, C. Cecchetti and F. Mastri. "A rigorous frequency-domain approach to large-signal noise in nonlinear microwave circuits." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 220-222.

The authors introduce a rigorous approach to large-signal noise in nonlinear microwave circuits. The analysis is based on the well-known representation of white noise as a set of uniformly spaced pseudosinusoidal signals with random phases. The spectral resolution required for a reliable noise simulation is evaluated by Monte Carlo analysis and is found to he quite high, so that the resulting nonlinear analysis involves spectra of many tens of thousands of lines. This kind of problem may be efficiently solved by the inexact-Newton harmonic-balance technique. With this method, the amplitude of the noise waveforms is arbitrary, so that large-signal noise effects may he directly evaluated.

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