Abstracts

Computer-Aided Noise Analysis of MESFET and HEMT Mixers

V. Rizzoli, F. Mastri and C. Cecchetti. "Computer-Aided Noise Analysis of MESFET and HEMT Mixers." 1989 Transactions on Microwave Theory and Techniques 37.9 (Sep. 1989 [T-MTT] (Special Issue on FET Structures Modeling and Circuit Applications)): 1401-1410.

The paper discusses a novel numerical approach to the noise analysis of MESFET and HEMT mixers of arbitrary topology. A qualitative picture of the complex physical mechanisms responsible for the generation of the IF noise is first outlined, and the corresponding computational algorithms are presented. The derivation of a noisy nonlinear model for the microwave FET is then addressed, and it is shown that a satisfactory solution to this apparently formidable problem can be obtained by combining a conventional time-domain model with standard noise information. The method has been implemented in a computer program designed to work in conjunction with an existing general-purpose harmonic-balance simulator. An example of application is described in detail to demonstrate the excellent performance of this new software tool.

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