Abstracts

Determination of the Correlation Spectrum of Oscillators with Low Noise

A general expression for the correlation spectrum of an oscillator, described by a set of nonlinear ordinary differential equations with intrinsic noise sources, is derived by a first-order perturbation theory. The analytical derivations are well suited to the numerical determination of the correlation spectrum by Poincare mapping methods. The theory is applied to a lumped circuit model of a Colpitts oscillator. The noise behavior of complex oscillator circuits used in microwave engineering may be simulated by the derived method.

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