Abstracts

Synchronization Effects in a Submillimeter Josephson Self-Oscillator

J.-C. Henaux, G. Vernet and R. Adde. "Synchronization Effects in a Submillimeter Josephson Self-Oscillator." 1983 Transactions on Microwave Theory and Techniques 31.2 (Feb. 1983 [T-MTT] (Special Issue on Millimeter-Waves)): 177-183.

We present an experimental and theoretical study of injection locking in an oscillator in the presence of noise. The experiment is performed with a Josephson point-contact self-oscillator heterodyne receiver irradiated by a very weak = 1-THz signal. A general calculation of the oscillator response at low injection level is made based on the theoretical treatment of Stratonovitch. We show that the Josephson oscillator described by the RSJ model obeys the general locking equation in the presence of noise. We assume a simple evolution law of the oscillator spectrum as a fnnction of detuning and calculate its response. The experimental results are compared with computer calculations and the implications are discussed.

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