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Direct access to quantum non-Gaussian noise through cross-correlation measurements IURII CHERNII, EUGENE SUKHORUKOV, University of Geneva — Detection of quantum non-Gaussian fluctuations is often difficult since they are dominated by the classical Gaussian noise, and requires the use of high frequency amplifiers. In our work we investigate the possibility to employ the cross-correlation technique in order to overcome these difficulties. We propose to measure the cross-correlator of outputs of a pair of two-level detectors, coupled to the source of fluctuations via an electric circuit. In the weak coupling regime, the noise induces rare stochastic transitions in the detectors, that allows one to perform the long time measurement. The transition rates can be derived from the evolution of the density matrix, calculated to the fourth order in level mixing of the two-level detectors. We express the cross-correlator in terms of these rates, and demonstrate that there is a range of parameters, where the main contribution to the cross-correlator is proportional to the intensity of the quantum non-Gaussian noise.

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