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Detection of the third moment of shot noise by a Josephson junction

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We use a hysteretic Josephson junction as an on-chip detector of shot noise of a tunnel junction. The detectable bandwidth is determined by the plasma frequency of the detector, which is about 50 GHz in the experiments that we report. The second moment of shot noise manifests itself as increased effective temperature of junction switching. The third moment results in a measurable change of the switching rate when reversing polarity of the current through the noise source. We have successfully analyzed the observed asymmetry using a phenomenological model. We compare our results to the more quantitative theories as well. Experiments on quantum point contacts and further work on tunnel junctions are in progress.