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**Giant current fluctuations in an overheated single-electron transistor** MATTI LAAKSO, TERO HEIKKILÄ, Low Temperature Laboratory, Aalto University, YULI NAZAROV, Kavli Institute of Nanoscience, Delft University of Technology — Interplay of cotunneling and single-electron tunneling in a thermally isolated single-electron transistor leads to peculiar overheating effects. In particular, there is an interesting crossover interval where the competition between cotunneling and single-electron tunneling changes to the dominance of the latter. In this interval, the current exhibits anomalous sensitivity to the effective electron temperature of the transistor island and its fluctuations. We present a new theoretical method for the study of the temperature fluctuations and induced fluctuations of other quantities, e.g., current, based on the Fokker–Planck equation. We apply this method to the study of the current and temperature fluctuations in an overheated SET around the crossover interval.

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