Overheated Single-Electron Transistor

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We consider the fully overheated single-electron transistor, where the heat balance is determined entirely by electron transfers. We find three distinct transport regimes corresponding to cotunneling, single-electron tunneling, and a competition between the two.

We find an anomalous sensitivity to temperature fluctuations at the crossover between the two latter regimes that manifests in an exceptionally large Fano factor of current noise.