Effects of dissipative electromagnetic environment on transport properties of hybrid single-electron transistor in Coulomb blockade regime

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We study low temperature transport properties of a hybrid single-electron transistor, consisting of a superconducting island and normal-metal electrodes, in the Coulomb blockade regime. We derive analytic expressions for the elastic and inelastic cotunneling currents, which exhibit power law suppression induced by the dissipative electromagnetic environment. The results can be used to improve the accuracy of hybrid devices employed in electrical metrology and for noise measurements in quantum information processing.
[1] V. Bubanja, Phys. Rev. B, in press.