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Enhanced thermal activation of a superconductor-normal metal quantum interference device[1] JIAN WEI, PAUL CADDEN-ZIMANSKY[2], Northwestern University, VENKAT CHANDRASEKHAR — We measure the magnetoresistance and current-voltage characteristics (CVC) of a superconductor-normal metal quantum interference device in the form of a mesoscopic normal-metal loop in contact with two superconducting electrodes. Below the transition temperature of the superconducting leads, sharp switching from the zero-resistance state to a finite-resistance state is observed at half-integer flux quanta. The CVC in the finite-resistance state can be described by the Ambegaokar-Halperin (AH) theory of the effect of thermal fluctuations in Josephson junctions, but here this effect of thermal flucuations is greatly enhanced. The CVC in the zero-resistance state can be described by the Langer-Ambegaokar-McCumber-Halperin theory of thermally activated phase slips in one dimensional superconductors, but also with enhanced phase slipping rates, or equivalently, lowered energy barriers.

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