Enhanced thermal activation of a superconductor-normal metal quantum interference device\textsuperscript{1} JIAN WEI, PAUL CADDEN-ZIMANSKY\textsuperscript{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 fluctuations 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.

\textsuperscript{1}This work was funded by the NSF through grant DMR-0604601.
\textsuperscript{2}now at Columbia University