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Macroscopic Resonant Tunneling Above the Crossover Temperature in a rf SQUID¹ LUIGI LONGOBARDI, DOUGLAS BENNETT, VIJAY PATEL, JAMES LUKENS, Stony Brook University, Department of Physics and Astronomy — We report studies of macroscopic resonant tunneling (MRT) between fluxoid states in an rf-SQUID qubit as function of temperature. The measured tunneling rates as a function of flux bias exhibit evidence of energy level quantization up to a temperature (900 mK) well above the crossover temperature (T_C) between the quantum and the thermal regime. The data agree with the level structure calculated using independently measured circuit parameters. The MRT is a useful probe of decoherence-inducing noise in the rf SQUID since the measurements are much simpler and give values for flux noise equal to those obtained from T_2 .

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