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Thermally activated phase slips from metastable states in mesoscopic superconducting rings IVANA PETKOVIC, ANTHONY LOLLO, JACK HARRIS, Yale University — In equilibrium, a flux-biased superconducting ring at low temperature can occupy any of several metastable states. The particular state that the ring occupies depends on the history of the applied flux, as different states are separated from each other by flux-dependent energy barriers. There is a critical value of the applied flux at which a given barrier goes to zero, the state becomes unstable, and the system transition into another state. In recent experiments performed on arrays of rings we showed that this transition occurs close to the critical flux predicted by Ginzburg-Landau theory. Here, we will describe experiments in which we have extended these measurements to an individual ring in order to study the thermal activation of the ring over a barrier that has been tuned close to zero. We measure the statistics of transitions as function of temperature and ramp rate.

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