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Measurement of the Magnetization of Mesoscopic Superconducting Rings with Cantilever Torsional Magnetometry WILL SHANKS, ANIA BLESZYNSKI-JAYICH, JACK HARRIS, Yale University — We have measured the magnetization of micron-sized aluminum rings in the superconducting state as a function of magnetic flux threading the rings. The rings were fabricated on the ends of 400 μm long, 400 nm thick silicon cantilevers, which act as sensitive torque meters. By measuring the shift in resonant frequency of the cantilever as a function of applied magnetic field, we are able to determine the ring's magnetization. Our measurements are in qualitative agreement with previous studies of similar rings. The results are promising for other proposed measurements of closed mesoscopic electronic samples using cantilever torsional magnetometry.

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