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Investigating magnetic order in Sr_2RuO_4 using cantilever torque magnetometry¹ RAFFI BUDAKIAN, JOONHO JANG, DALE VAN HARLINGEN, University of Illinois at Urbana-Champaign, YOSHI MAENO, Kyoto University — Following the initial μSR and NMR studies suggesting that Sr_2RuO_4 is a spin-triplet superconductor, there has been a great deal of interest to understand the nature of the order parameter. Although Sr_2RuO_4 is similar in structure to the layered high-Tc cuprate superconductors, it is thought to possess chiral $p_x \pm ip_y$ pairing symmetry. The complex order parameter can give rise to a rich variety of new correlated states, such as domains having orbital order that possess a net magnetic moment and half-integer vortices with zero-energy modes. We have applied ultrasensitive cantilever torque magnetometry to measure the magnetic moment, susceptibility, and vortex entry into micron-size Sr_2RuO_4 in search of magnetic moments generated by chiral edge currents and fractional vortices. This talk will present recent data in this effort.

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