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Heat Capacity Measurements of Sr_2RuO_4 Under Uni-axial Stress

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— One of the most-discussed possible pairing symmetries of the superconductor Sr_2RuO_4 is p_x+/-ip_y. By applying in-plane uniaxial stress, the degeneracy of the p_x and p_y components should be lifted, yielding two critical temperatures (T_c). Hicks et al. observed an increase of T_c of Sr_2RuO_4 under both compressive and tensile stress [1], and did not find evidence for splitting of transition. However, that result was based on magnetic susceptibility measurements, which would be sensitive only to the upper transition. For a direct test of possible splitting, we measure the heat capacity of Sr_2RuO_4 under uniaxial stress. To do so, we have developed an approach to measure heat capacity under non-adiabatic conditions. We have observed the increase in T_c under compressive strain, providing the first thermodynamic evidence for the strain-induced increase in T_c of Sr_2RuO_4, and also resolve strong strain-induced changes in the normal-state heat capacity. [1] Clifford W. Hicks et al., Science **344**, 283 (2014).

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