Heat Capacity Measurements of \( \text{Sr}_2\text{RuO}_4 \) Under Uni-axial Stress

YOU-SHENG LI, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany, ALEXANDRA GIBBS, Max Planck Institute for Solid State Research, Stuttgart, Germany, ANDREW MACKENZIE, CLIFFORD HICKS, MICHAEL NICKLAS, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany — One of the most-discussed possible pairing symmetries of the superconductor \( \text{Sr}_2\text{RuO}_4 \) 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 \( \text{Sr}_2\text{RuO}_4 \) 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 \( \text{Sr}_2\text{RuO}_4 \) 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 \( \text{Sr}_2\text{RuO}_4 \), and also resolve strong strain-induced changes in the normal-state heat capacity. [1] Clifford W. Hicks et al., Science 344, 283 (2014).