Abstract Submitted
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Competition between quantum criticality and Fermi liquid behavior revealed by transport measurements in ultrapure $Sr_3Ru_2O_7$ JAN BRUIN, HIDEAKI SAKAI, University of St Andrews, ROBIN S. PERRY, University of Edinburgh, ANDREW P. MACKENZIE, University of St Andrews — The layered perovskite metal $Sr_3Ru_2O_7$ has gained considerable interest since the discovery of its field-tuned quantum criticality [1] and the subsequent discovery of a new electronic phase with a high magnetoresistive anisotropy, consistent with the existence of an electronic nematic fluid [2]. Further studies have explored the properties of the "normal state" from which the anisotropic phase emerges in terms of thermodynamics [3] and quantum oscillations [4], but a comprehensive study of the transport properties of the purest samples has so far been lacking. Here, we present the first study of the normal state resistivity of ultrapure $Sr_3Ru_2O_7$, involving temperature control over more than two orders of magnitude and a 15T magnet system. The high signal to noise of this measurement allows for precise extraction of the temperature dependence exponent and provides detailed understanding of the transport signatures of field-tuned quantum criticality.
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