

Abstract Submitted
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Unconventional superconductivity in U_2PtC_2 NICK WAKEHAM, ANDY MOUNCE, Los Alamos Natl Lab, NI NI, UCLA, MINGU KANG, Los Alamos Natl Lab, SANGYUN LEE, Sung Kyun Kwan University, ROMAN MOVSHOVICH, JIANXIN ZHU, Los Alamos Natl Lab, TUSON PARK, Sung Kyun Kwan University, ERIC BAUER, JOE THOMPSON, FILIP RONNING, Los Alamos Natl Lab — U_2PtC_2 has long been known to be a moderately heavy-fermion superconductor with transition temperature $T_c \sim 1.5$ K. However, until recently little was known about the nature of the superconductivity. We will present a summary of our recent investigation into the superconductivity in this material through structural, transport, thermodynamic, and nuclear magnetic resonance measurements. Evidence for an unconventional gap structure comes from power law dependencies of the specific heat as a function of field and temperature T , as well as T^2 temperature dependence of the spin-lattice relaxation rate. The upper critical field exceeds the Pauli limit and there is no change in the Knight shift through T_c , which is suggestive of spin-triplet superconductivity. Based on DFT calculations the Fermi surface consists of 2 complex sheets. In pure U_2PtC_2 as well as the doped samples there is evidence for competing ferromagnetic interactions, which may be relevant to the superconductivity.

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