

Abstract Submitted
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Ambient-pressure thermodynamic measurements on UGe_2 F. HARDY, C. MEINGAST, H. VON LOEHNEISEN, Forschungszentrum Karlsruhe, Institut fuer Festkoerperphysik, 76021 Karlsruhe, Germany, Physikalisches Institut, Universitaet Karlsruhe, 76128 Karlsruhe, J. FLOUQUET, A. HUXLEY, SPSMS-DRFMC, CEAGrenoble, 38054 Grenoble cedex, France, J. LASHLEY, Materials Science Division and Technology Division, LANL, Los Alamos, New Mexico 87545, USA, R.A. FISHER, N.E. PHILLIPS, Materials Science Division, LBNL, Berkeley, California 94720, USA. — The pairing interaction leading to the formation of the Cooper pairs remains unidentified in the ferromagnetic superconductor UGe_2 . Nevertheless, there is strong experimental evidence that superconductivity is not mediated by the magnetic fluctuations that drive $T_{Curie}(p)$ to zero; it rather appears closely related to another phase boundary $T_x(p)$ that occurs at lower pressure. Theoretical works suggested that this additional phase boundary could arise either from a coupling between SDW and CDW orderings or from a peak in the electronic density of states. Although the existence of this anomaly is experimentally incontestable between 0.6 and 1.2 GPa, the situation at ambient pressure remains ambiguous. We discuss the aforementioned scenarios in the light of recent high-resolution thermal expansion and calorimetric measurements realized under high magnetic fields at ambient pressure.

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