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SFB 1242 Nichtgleichgewichtsdynamik kondensierter Materie in der Zeitdomäne

UNIVERSITÄT DUISBURG ESSEN

Open-Minded

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Multiphase superconductivity in $CeRh_2As_2$

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I will report on the discovery of $CeRh_2As_2$, a new heavy fermion superconductor with a T_c of 0.26 K. In the normal state, an anomaly at 0.4 K points to an ordered state of unknown character, without signatures in magnetic probes. The superconducting state has huge and anisotropic critical fields: 14 T for magnetic fields in the c-direction and 2 T for inplane fields. Most interestingly, a field-induced phase transition within the superconducting state appears for c-axis fields in magnetisation, susceptibility and magnetostriction. We find that the low-field state is Pauli limited with enhanced critical fields. When this state is suppressed, a purely orbitally limited high-field superconducting state appears.

The phase diagram can be understood by taking into account the local symmetry at the Ce position, where inversion symmetry is broken although $CeRh_2As_2$ is globally centrosymmetric. This leads to staggered Rashba spin-orbit coupling, and the field drives a transition from even to odd parity superconductivity.

Für diese Zeit steht eine Kinderbetreuung nach vorheriger Anmeldung zur Verfügung.

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