Spin triplet superconductivity in uranium ditelluride

Nicholas P. Butch

NIST Center for Neutron Research and University of Maryland

The correlated electron compound uranium ditelluride UTe_2 hosts spin triplet superconductivity below a critical temperature of 1.6 K. The superconducting state is characterized by anisotropic and large upper critical field values, approximately 35 T along the crystallographic b-axis. Intriguingly, at still higher magnetic fields, up to 65 T, a reentrant superconducting phase is stabilized along a different direction. While the novelty of these behaviors is apparent, ongoing studies are directed at identifying the superconducting order parameter. Experiments show that the low-field superconducting state has two components, spontaneously breaks time-reversal symmetry, and supports chiral surface states.