**Multiple superconducting phases in the heavy fermion superconductor UTe2**

**Georg Knebel**

The unconventional superconductor UTe­2 has attracted much attention due to the possible spin triplet pairing in the superconducting state. Hallmarks for this are the extremely high superconducting critical fields along the different crystallographic directions and the appearance of multiple superconducting phases as a function of magnetic field and high pressure. In particular, when the field is applied along the b axis of the magnetic hard direction a spectacular re-enhancement of superconductivity is observed. While initially the proximity to a ferromagnetic quantum phase transition had been proposed as driving mechanism for superconductivity, inelastic neutron scattering clearly show the appearance of incommensurate antiferromagnetic magnetic fluctuations. Furthermore, under the application of high-pressure antiferromagnetic order occurs. In this presentation, we will give an overview on recent experiments obtained at the LNCMI Grenoble and by neutron scattering under extreme conditions emphasizing the rich physics in UTe2.