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【707】Complex magnetic order and inverse magnetic melting in Ce3TiSb5

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We report high-resolution neutron diffraction on the heavy fermion antiferromagnet Ce3TiSb5. Our specific heat and magnetic susceptibility measurements as a function of magnetic field reveal a phase diagram with three distinct magnetic phases. Using neutron diffraction we study the magnetic structure, and uncover a multi-k spin structure in the intermediate field phase. Magnetic multi-k structures are of current interest because they are an important ingredient for topologically non-trivial properties. Finally, our measurements demonstrate that the high-field magnetic phase exhibits inverse melting, where the magnetically ordered state becomes disordered upon cooling, which suggests that the complex magnetic order of Ce3TiSb5 is driven via the competition of several degrees of freedom.

Theoretical Work

Authors: JANOSCHEK, Marc; FLURY, Simon; Dr SIMETH, Wolfgang (Paul Scherrer Institut); Prof. LUO, Yongkang (Huazhong University of Science & Technology)

Presenter: JANOSCHEK, Marc

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