

766th ASRC Seminar

Date: 令和元年11月21日(木)

11:00 ~ 12:00

Location: 先端基礎交流棟2階ロビー

Speaker: Dr. Yoshifumi Tokiwa

(Universität Augsburg)

Title: Quantum criticality of frustrated
Kondo lattice systems

要旨: Geometrical frustration suppresses magnetic order and stabilizes exotic phases such as spin liquids. Whether geometrical frustration in metals can induce unconventional quantum critical points (QCP) is an active area of research. We focus on the frustrated quasi-Kagome Kondo lattice systems, YbAgGe and CeRhSn [1,2].

Bicritical point, where two distinct symmetry-broken phases are unstable, is typical for spin-flop metamagnetism. The antiferromagnet YbAgGe possesses such bicritical point. I discuss that due to frustration the system is placed very close to quantum bicritical point, causing non-Fermi liquid (NFL) behavior.

CeRhSn exhibits a zero-field QCP. We found that the qualitative behavior of linear thermal expansion, which measures uniaxial pressure derivative of entropy, depends on measurement direction, namely Fermi liquid and NFL perpendicular and along Kagome plane, respectively. I show that this anomalous behavior is consistent with frustration-induced QCP.

[1] Y. Tokiwa, M. Garst, P. Gegenwart, S. L. Bud'ko, P. C. Canfield, Phys. Rev. Lett. 111, 116401 (2013)

[2] Y. Tokiwa, C. Stingl, M. S. Kim, T. Takabatake, P. Gegenwart, Sci. Adv. 24, e1500001 (2015)

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