

Magnetic Ordering in $\text{Ba}_3\text{RRu}_2\text{O}_9$ (R = Tb, Tm)

Presenter:

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Date and time:

27 March, 2025
14:00-14:45

Location:

KFKI Campus, Bldg 21 Lecture room + Online

Seminar link:

<https://ek.hun-ren.hu/s/BNC/Seminars/>

Abstract:

The Ru-based compounds are always interesting to study due to the spatially extended 4d-orbitals and substantial spin-orbit coupling leading to a variety of interesting physical properties, like quantum spin liquid and orbital ordering [1,2]. The study becomes further interesting by combining Ru with rare earths (R) owing to the interactions between 4d and 4f electrons leading to a complex magnetic order. Among the various 4f-4d systems, the $\text{Ba}_3\text{RRu}_2\text{O}_9$ family of compounds have gained special interest owing to their diverse magnetic ground states ranging from ferromagnetic to antiferromagnetic depending upon the R atom [3,4].

In this talk, I will discuss magnetic ordering in polycrystalline $\text{Ba}_3\text{RRu}_2\text{O}_9$ (R = Tb and Tm) compounds using microscopic techniques of neutron diffraction and muon spin relaxation (MuSR), including their crystal structures, magnetometry results, and potential applications.

References

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- [2] P. Khalifah, R. Osborn, Q. Huang, H. W. Zandbergen, R. Jin, Y. Liu, D. Mandrus, R. J. Cava, *Science* 297, 2237 (2002).
- [3] Mark S. Senn, Simon A. J. Kimber, Angel M. Arevalo Lopez, Adrian H. Hill, and J. Paul Attfield, *Phys. Rev. B* 87, 134402 (2013).
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