



Invitation

LMU-Seminar

Title: Muon measurements of magnetism in frustrated spin-chain compound $\text{Sr}_3\text{NiIrO}_6$

Speaker: Dr. Joel Barker
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Time: Wednesday, April 18th 2018, 13:15

Place: WBGB/021

Abstract:

$\text{Sr}_3\text{NiIrO}_6$ is a member of a family of oxides that have attracted much attention, as they exhibit a wide variety of unconventional magnetic properties as a result of the interplay between low-dimensionality, magnetic frustration, and magneto-crystalline anisotropy. The structure consists of alternating IrO_6 distorted octahedra and NiO_6 trigonal prisms arranged in chains along the c-axis, which order ferrimagnetically. The chains are arranged on a triangular lattice, and behave like Ising spins with antiferromagnetic inter-chain coupling, leading to frustration. We have performed muon-spin spectroscopy measurements on a polycrystalline sample of $\text{Sr}_3\text{NiIrO}_6$, as a complement to previous neutron measurements performed on this fascinating material. By analyzing the internal fields experienced by implanted muons, we show that this system appears to have two distinct regions in the magnetic phase diagram: a frozen regime below about 40 K, and a highly dynamic region between 40 and 70 K. Additionally, our longitudinal-field study has revealed the nature of the spin correlation function above the freezing transition.

[1] Toth, S. et al, Physical Review B 93, 174422 (2016)

[2] Singleton, J. et al, Physical Review B 94, 224408 (2016)

[3] Gordon, E. E. et al, Journal of Chemical Physics 144, 114706 (2016)