



# IFMP Seminar

**Date** Tuesday, February 13, 2024, at 13:00 (note unusual date and time!)

**REC/C213**

**Speaker** **Yoshihiko Ihara**

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**Title** **NMR Study of the Low-Field Magnetic Structure in  $\text{Cu}_2(\text{OH})_3\text{NO}_3$**

**Abstract** The Cu-based mineral rouaite has chemical composition  $\text{Cu}_2(\text{OH})_3\text{NO}_3$  and is composed of two-dimensional Cu layers separated by  $\text{NO}_3$ . On the magnetic Cu layer, the two crystallographically distinct Cu sites form ferromagnetic (Cu-A site) and antiferromagnetic (Cu-B site) chains, which are alternatively connected with weaker interactions [1]. Two successive magnetic transitions were observed at  $T_{N1} \sim 8$  K and  $T_{N2} \sim 4$  K from heat capacity and magnetization measurements, respectively [2]. To pin down the magnetic structure in the low-field ground state, we performed  $^1\text{H}$ -NMR on a single-crystalline sample, applying external magnetic fields of  $\sim 0.7$  T along three independent directions. From the spectral splitting observed in the magnetically ordered state, we estimate the strength and direction of internal fields at the H site. By comparing the internal fields simulated from the proposed model structure, the magnetic structure in the ground state is identified. In the presentation, we will discuss in detail how the hyperfine field at the H site was calculated from the model structure.

[1] H. Kikuchi, *et al.*, J. Phys.: Conf. Ser. **969**, 012117 (2018).

[2] L. Yuan, *et al.*, Phys. Rev. B **106**, 085119 (2022).

Host: D. Peets

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