



ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE

# Spin Wave investigation of $\text{Cu}_2\text{OSO}_4$

At the Laboratory for Quantum Magnetism (LQM) we focus on studying magnetic phenomena in correlated electron materials ranging from local spin clusters to novel superconductors. Our aim is to combine the powerful techniques of neutron scattering at large scale facilities with in-house measurements under extreme conditions - sub-Kelvin temperatures, large magnetic fields and high pressures. As a cutting-edge laboratory, we are always looking for motivated undergrad students to complete our team.

The Spin Wave approximation is one of the most common method when it comes to investigating the ground state properties of a given Hamiltonian. In this project, we propose to use the SpinW software in order to examine the low-lying energy properties of  $\text{Cu}_2\text{OSO}_4$ . The results can be compared with some real neutron scattering data obtained at an international facility. It is a mostly numerical project, but a nice understanding of the theory is required. Depending on the student's interest, the contents and approach of the project is adjustable.

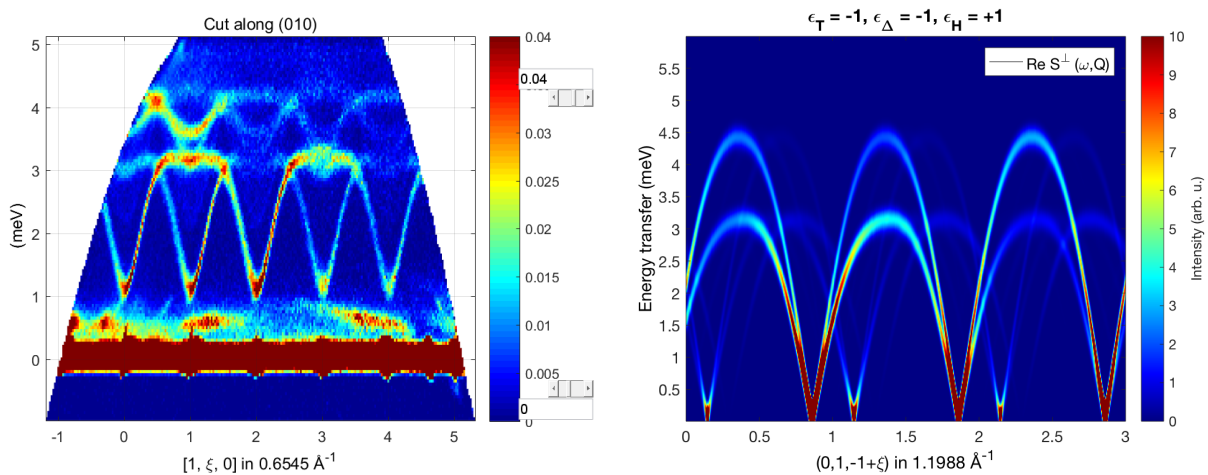


Figure 1: (left) Neutron scattering result and (right) SpinW simulation

We offer a strong research environment in close collaboration with international facilities such as PSI, ILL (Grenoble), Copenhagen, Tokyo. We strongly encourage students to extend their semester work to a master project and a PhD and also give the possibility to publish the outcome of the projects in internationally recognized science reviews. For more information, please contact Prof. Henrik Rønnow (henrik.ronnow@epfl.ch) to schedule a discussion.