



At the [Laboratory for Quantum Magnetism \(LQM\)](#) we perform fundamental research in magnetism and correlated electron materials. Our core activities span from synthesis of novel materials over in-house experimental techniques in combination with low temperature, high pressures and high magnetic fields, neutron and X-ray scattering to theory and modeling. The LQM is part of the [École Polytechnique Fédérale de Lausanne \(EPFL\)](#), a world-renowned research and education center, offering an ideal academic environment as well as an excellent connection to industry.

As the world's flagship center for neutron science, the [Institute Laue-Langevin \(ILL\)](#) provides scientists with a very high flux of neutrons to be used for research in a variety of fields and in particular for fundamental material science and condensed matter. Neutron spectroscopy probes the dynamics of materials which hold the key for understanding many quantum magnetic states.

Project description

When magnetic interactions in a material are competing, it is termed "frustrated" and many exotic quantum properties may occur. This PhD project is focused on investigating and tuning of phases of such frustrated quantum magnets by using extreme conditions of low temperatures and high pressures. The candidate will perform inelastic neutron scattering experiments on cold and thermal neutron spectrometers at the ILL as well as use supporting techniques such as synchrotron X-ray diffraction and specific heat measurements at the LQM.

We offer a challenging and exciting project in the field of experimental quantum magnetism under the supervision of Prof. Henrik M. Rønnow (EPFL) and instrument scientist Dr. Ursula B. Hansen (ILL). The project is based at the ILL for the first 2 years followed by 2 years at the EPFL. The candidate will benefit from the full integration in these dynamic and international research communities.

We are looking for a highly motivated candidate with a master in physics or related fields. The successful candidate has a strong command of solid-state physics and quantum mechanics, good communication skills in English (spoken and written) and a willingness to learn and engage in challenging research. Programming skill in Python or MATLAB as well as prior experience with neutron or X-ray scattering is a plus but not mandatory.

How to apply: Applications should include grade transcript, CV, motivation letter and three contact persons for references. Applications should be sent to Prof. Henrik M. Rønnow (henrik.ronnow@epfl.ch) and Ursula B. Hansen (bengaardhansen@ill.fr). You are also very welcome to contact us for more information. We encourage people of all backgrounds and genders to apply.

The selected PhD student will need to enroll in the physics program of the EPFL doctoral school. After one year of successful probation, the initial contract will be extended up to a total of four years. Doctoral school information and employment conditions at EPFL are described at:

- <https://www.epfl.ch/education/phd/programs/edpy-physics>
- <https://www.epfl.ch/education/phd/doctoral-studies-structure/doctoral-students-salary>
- <https://www.epfl.ch/about/working/working-at-epfl/employment-conditions>

Deadline: June 1st, 2024 (open to discussion).