

The Institut Laue-Langevin (ILL), situated in Grenoble, in the heart of the French Alps, is an international research centre at the leading edge of neutron science and technology. As the world's flagship centre for neutron science, the ILL makes its facilities and expertise available to visiting scientists from all over the world.

If you want to contribute to the work of our teams, **then come and join us!**

We are currently looking for a trainee for the following project:

===

Internship (Ref. SPECT_6) **Time of flight neutron spectroscopy on absorbing samples**

Description:

Neutron time-of-flight spectroscopy is a unique and extremely powerful technique to study dynamics and excitations in condensed matter. Typical applications include phonon dynamics and dispersion relations, magnetic excitations, phonon-magnon interactions, quantum and frustrated magnetism, unconventional superconductivity, etc. The new generation of time-of-flight spectrometers, such as IN5 and the future PANTHER (currently in the design phase) at the ILL, have detectors with a massive coverage out of the horizontal scattering plane, and this poses new problems in handling the data. A new generation of data reduction software is being developed at the ILL within the EU funded Bastille project, and one of the major challenges is to develop algorithms to correct for neutron absorption in the sample. To this end, the aim of the internship is to perform measurements on strongly absorbing samples in order to test and compare existing absorption correction algorithms as well as develop new ones. We plan to use relatively strongly absorbing Mn₂Au samples, in view of their current interest in the domain of antiferromagnetic spintronics and strong spin-orbit coupling resulting from Mn-Au hybridization.

Activities of the trainee:

The student should perform measurements of absorbing Mn₂Au samples in a few different geometries on one of the time-of-flight spectrometers at the ILL and perform the data reduction/analysis. Different absorption correction routines should be applied and compared quantitatively. Based on such comparison, new algorithms will be developed to be used on ILL time-of-flight spectrometers in the future. The measurements of the phonon and magnon spectrum in Mn₂Au will allow to determine the energy scale of magnetic and elastic interactions as well as the magnetoelastic anisotropies, and are expected to give microscopic insight into the magnetoelastic coupling originating in the strong spin-orbit coupling.

===

Level required: 4th (possibly 3rd) year university studies in Physics

Language skills: You should be able to communicate in English or in French

Notes: These posts are internships with a maximum duration of 4 months

Benefits: You will receive a monthly allowance of between 435 € and 1050 €, depending on the duration of your internship and your profile

How to apply: Please send your application directly to the supervisor:
Ref. SPECT_6: Björn Fåk, e-mail: fak@ill.eu