



***Post-doctoral Researcher Position
at the Laboratoire National des Champs Magnétiques Intenses - Toulouse***

Study of magnetic systems under strong magnetic fields

Missions

The post-doc will study various magnetic systems under extreme conditions of intense magnetic field and low temperature. In particular, he/she will carry out a series of measurements (magnetic diffraction, Larmor diffraction, magnetocaloric effect measurements, etc.) to characterize the field-induced phases in the frustrated antiferromagnetic compound TbB₄. He/she will be involved in instrumentation projects to improve the sensitivity of magnetization measurements in high pulsed magnetic fields. In addition to his/her own research activities, he/she will sometimes be part of a team of local contacts receiving external users on the IN22 spectrometer at the Institut Laue Langevin (ILL, Grenoble) or on the ID24 beamline at the ESRF (Grenoble) for magnetic diffraction (ILL) or X-ray absorption spectroscopy (ESRF) experiments using pulsed field devices developed by the LNCMI-T.

Activities

The post-doc will mainly carry out neutron diffraction, X-ray absorption spectroscopy and pulsed magnetic field magnetization experiments. He/she will get involved in the samples' characterization (LAUE diffraction, preparation by polishing) prior to their mounting on sample holders. He/she will take in charge the preparation of the experiments and the data analysis, as well as in designing new software tools for data treatment. He/she will analyze data and disseminate results through peer reviewed publications and presentations at scientific meetings and conferences.

Skills

We are looking for a highly motivated, independent scientist with the ability to work as part of a team. He/she will have a PhD in experimental condensed matter physics. The proposed subject requires the candidate to have a marked taste for activities with a strong experimental component (work under binoculars, cryogenics, etc.). Good communication skills in English, both written and spoken, are also essential. Programming skills will be highly appreciated for data analysis.

Work Context

The Laboratoire National des Champs Magnétiques Intenses (LNCMI) is a research infrastructure welcoming researchers from around the world for high magnetic field experiments. At two sites, LNCMI offers continuous fields up to 37 T in Grenoble (LNCMI-G) and pulsed fields up to 90 T in Toulouse (LNCMI-T). The scientific activities of the laboratory involved both in-house and collaborative research.

The postdoctoral researcher will work in the scientific team "Quantum conductors and magnets" of the LNCMI-T. He/She will be supervised by Fabienne Duc and William Knafo. He/she will collaborate with researchers and engineers from LNCMI-T, CEA-Grenoble, ILL and ESRF, as well as the DESY synchrotron center in Hamburg.



Funding and salary

The postdoctoral research position is funded for 2 years. The gross salary will be between 2800 and 3960 € / month, depending on the work experience, which corresponds to a net salary between 2250 and 3200 € / month (after deduction of social security and income taxes). The start date can be as soon as possible.

Contact

Applications should be sent to Fabienne Duc (fabienne.duc@lncmi.cnrs.fr).

References

Possible stripe phases in the multiple magnetization plateaus in TbB_4 from single-crystal neutron diffraction under pulsed high magnetic fields, N. Qureshi *et al.*, [Phys. Rev. B 106, 094427 \(2022\)](#)

40-Tesla pulsed-field cryomagnet for single crystal neutron diffraction, F. Duc *et al.*, [Rev. Sci. Instrum. 89, 053905 \(2018\)](#)

Neutron diffraction study on the multiple magnetization plateaus in TbB_4 under pulsed high magnetic field, S. Yoshii *et al.*, [Phys. Rev. Lett. 103, 077203 \(2009\)](#)