



Open Postdoctoral position at the French National High Magnetic Field Facility
Quantum materials above 100 T

Project –Currently, new challenges in quantum material science require fields over 100 T. For instance, the exploration of the quantum limit of some dilute metals requires more than 100 T in order to stabilize novel phases like excitonic condensates. Quantum spin liquids, exemplified by herbertsmithite, have been realized experimentally. Fields above 100 T are needed to induce exotic magnetic phases in these systems. In order to address these issues, the LNCMI has recently started the construction of a new non-destructive pulsed magnet that will ultimately achieve 120 T.

Mission – The candidate will have two missions. First developing the instrumentation for low temperature ultrasound, electronic transport and magnetic measurements in the new 120 T pulsed magnet, in collaboration with local scientists. The pulse duration from 80 T to 120 T is significantly shorter than typical pulsed magnets, hence a new and rapid instrumentation must be set up. This mission entails development and tests of new electronics, measuring probes and acquisition systems. The second mission will be to carry out a research program on quantum materials such as dilute metals and quantum spin liquids in the 120 T magnet, in collaboration with scientists at or visiting LNCMI.

Research Environment – The Laboratoire National des Champs Magnétiques Intenses (LNCMI) brings together two centres – one in Grenoble, specialising in DC fields, and one in Toulouse specialising in pulsed fields. This project will be mainly carried out in Toulouse, with occasional research stay at LNCMI-Grenoble. The strength of LNCMI is based on the range of ambitious and pioneering magnet development programs and in-house development capabilities, which has been systematically developed and maintained over many years. The high-level in-house activities can provide highly efficient and customized cryogenics and unique instrumentations for advanced high magnetic experiments.

Skills - The candidate should be motivated for topical research and experimental development in a high-level international laboratory and is expected to have a strong scientific background. He/she should have experience in experimental studies of strongly correlated electron systems. Skills in coding with python/LabVIEW will be very appreciated. Finally, fluency in spoken and written English is mandatory.

The contract duration is one-year, renewable at least one time (at least 24 months in total). Applications should include a CV mentioning at least two references and a complete list of publications and conferences. Expected starting date : November 2025

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