



Open postdoctoral position at the LNCMI-Toulouse

“High field properties of high- T_c superconductors”



A postdoctoral position is open in the “Strongly Correlated Fermions” group at the LNCMI Toulouse (3 permanent researchers and 2 PhD students) where we focus our research on the high magnetic field properties of different correlated systems, particularly cuprate superconductors. We probe the normal and superconducting properties of those materials with several experimental setups: magneto-transport, ultrasound, torque, contactless transport (TDO) in extreme conditions : very low temperature (200 mK) and high magnetic field (90 T).

Major breakthroughs in the field have been achieved in Toulouse thanks to improvements in electronics and sample environment setups: the discovery of quantum oscillations in underdoped high T_c superconductors [1], the radical change in the electronic structure of cuprates at the critical point of the famous *pseudogap* phase, a signature of a quantum phase transition [2], and the Planckian dissipation in overdoped cuprates [3].

We are looking for a highly motivated and independent scientist with a PhD in experimental physics. Specific experience in condensed matter physics, low-temperature techniques, and measurements in magnetic fields would be appreciated. Good communication skills in English, both written and oral, are a requirement.

The successful candidate will be in charge of performing high-field experiments in several families of high T_c superconductors, contributing to the development of new experimental techniques beyond the state of the art in the megagauss installation (fields above 150 T) [4], and providing technical and scientific support for the international users of the pulsed field facility.

The position is for one year, with possibility of a one-year extension. The salary will be determined in accordance with the CNRS payscale.

The “Laboratoire National des Champs Magnétiques Intenses” is a large-scale facility, member of the European Magnetic Field Laboratory, enabling researchers to perform experiments at the highest possible magnetic fields. Continuous fields up to 37 T are available in Grenoble and pulsed fields up to 98.8 T in Toulouse.

Persons to contact:

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[1] N. Doiron-Leyraud *et al.*, *Nature* **447**, 565 (2007)

(see also C. Proust & L. Taillefer, *Annual Review of Condensed Matter Physics* **10**, 409 (2019))

[2] S. Badoux *et al.*, *Nature* **531**, 210 (2016)

[3] A. Legros *et al.*, *Nature Physics* **15**, 142 (2019)

(see also <https://www.quantamagazine.org/universal-quantum-phenomenon-found-in-superconductors-20181119/>)

[4] <http://lncmi.cnrs.fr/la-recherche/magnet-materials-technology/semi-destructive-pulsed-fields-beyond-100-t/>