Post-Doctoral position in quantum materials under extreme conditions at the Pheliqs laboratory (CEA Grenoble, Université Grenoble Alpes, Grenoble INP)

Context

We propose a two years post-doctoral position to work on the NSERC / ANR project KONWEY (Kondo-Weyl semi metals: a platform for new quantum chiral states) at the Pheliqs laboratory of CEA Grenoble and at the high magnetic field laboratory LNCMI Grenoble. KONWEY is a common project between these two French partners and the "Université de Montreal" and "Université de Sherbrooke" in Canada. In the project we study quantum materials where strong correlations interplay with spin–orbit coupling, and space-group symmetry drive topological states of matter, as exemplified by Weyl–Kondo semi-metals.

Activities

At Pheliqs, the post-doctoral researcher will be in charge of low temperature transport and thermodynamic measurements under extreme conditions, including high pressure and uniaxial strain studies on different Weyl–Kondo semi-metal systems. Crystals will be grown by the Canadian partners of the project. The Pheliqs laboratory is well equipped for low temperature studies down to 20 mK using different dilution refrigerators combined with magnetic fields up to 18 T. Piston cylinder and diamond anvil pressure cells allows for detailed high-pressure studies up to 15 GPa. The pressure equipment is also compatible with studies at the high magnetic field laboratory LNCMI, where measurements for fields above 18 T will be performed.

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 microscopes, cryogenics, etc.). Good communication skills in English, both written and spoken, are also essential. Programming skills will be highly appreciated for developing new instrumentation and data analysis.

Scientific environment

The Pheliqs laboratory of CEA Grenoble (attached also to Université Grenoble Alpes and Grenoble INP) is a research unit with about 100 researchers who are working in five different teams. The position proposed here is within the Imapec team. The research of the IMAPEC team concentrates on physics of strongly correlated quantum materials, with a focus on unconventional superconductivity, magnetic quantum phase transitions, electronic and magnetic topological materials. The laboratory is known for low temperature measurements in high magnetic fields combined with high pressure studies. Furthermore, the Imapec team has various single crystal growth facilities including Czochralski, Bridgman, flux and chemical vapor transport. The candidate can interact with the theory group of Pheliqs, and also with the theory partners of the KONWEY project. The Imapec team has also strong collaborations with the large-scale facilities in Grenoble: high fields measurements at the LNCMI, neutron scattering experiments at the ILL, or x-ray scattering at the ESRF. In the recent years, it could build on this unique environment to perform several high impact studies on the spin triplet strongly correlated superconductor UTe_2. Besides the collaboration with Canadian teams

directly involved in the project, the team has very strong ties with several teams in Japan, and also in Germany, Spain, or Hong-Kong.

Funding and salary

The postdoctoral research position is funded for a period of 2 years. The gross salary will be between 3404 and 3675 € / month, depending on the work experience, which corresponds to a net salary between 2662 and 2877 € / month (after deduction of social security and income taxes).

Contact

For further information concerning this position offer or the scientific environment please contact Georg KNEBEL (georg.knebel@cea.fr). Applications including CV, summary of previous research and at least two recommendation letters should be sent also to Georg KNEBEL (georg.knebel@cea.fr) before August 31, 2025.