

27 March 2024

Contractual Research Engineer contract offer

Funded by
the European UnionEuropean Research Council
Established by the European Commission

MAGNETALLIEN

Subject : Setting up and characterizing a cryogenic high frequency magnetotransport

General information

Workplace: Nancy, FRANCE**Type of contract:** FTC Scientist**Contract period:** 2 years (1 year renewable 1 year)**Expected date of employment :** 1st September 2024**Proportion of work:** Full time**Remuneration:** ~ 2800 € gross/monthly if less than 3 years of experience.**Desired level of education:** PhD in Physics or electronics or equivalent, Diplôme d'École d'Ingénieur in France, with less than three years of experience.**Experience required:** experience in Radio Frequency and low noise instrumentation.

Missions / Activities

These activities are part of the ERC CoG 101086807 MAGNETALLIEN project which aim to probe AC detection of spin pumping signal and its high harmonics. The main tasks are as follows: develop on RF design on chip for 1 to 40 GHz for AC spin pumping detection. Build an RF head for a cryogenic insert on a new high vectoral field cryogenic setup. Depending on progress, the selected candidate will be involve in the spin pumping characterization of epitaxial compounds along with a PhD student.

Work context

The selected candidate will work within the SPIN research group, Institute Jean Lamour, under the supervision of Dr. J. Carlos Rojas-Sánchez, and Dr. Sébastien Petit-Watelot.

Within the framework of the ERC CoG MAGNETALLIEN project, we are seeking a highly motivated young fellow with experience in electronics (low frequency and RF), electric and magnetic characterization. We are acquiring a new 3D vectoral field with cryogenic capability from about 3 K to 300 K. The candidate will have to develop an RF design for the on-chip detection up to 40 GHz and the associated RF acquisition chain (mixers, power combiners, delay lines, amplification, fast oscilloscopes or spectrum analyzer). The aim is to have an optimize system for the detection of AC spin pumping signal, and its harmonics.

Skills

Background in instrumentation, ideally in RF and low noise electrical characterization. Good knowledge in LabVIEW or Python. Knowledge in magnetotransport , solid state physics, spintronics is a plus.

The position you are applying for is located in a sector relating to the protection of scientific and technical potential. It therefore requires, in accordance with the regulations, that your arrival be authorized by the competent authority of the French Ministry of Higher Education, Research and Innovation.

Constraints and risks

No major risk.

About Institut Jean Lamour

The Institut Jean Lamour (IJL) is a joint research unit (UMR 7198) of CNRS and *Université de Lorraine*. Focused on materials and processes science and engineering, it covers: materials, metallurgy, plasmas, surfaces, nanomaterials and electronics. It regroups 183 researchers/lecturers, 91 engineers/technicians/administrative staff, 150 doctoral students and 25 post-doctoral fellows. Partnerships exist with 150 companies and our research groups collaborate with more than 30 countries throughout the world.

Its exceptional instrumental platforms are spread over 4 sites; the main one is located on Artem campus in Nancy.

The project will be carried out within the SPIN team whose subjects range from the development of innovative materials for implementation in spin electronics devices, to the development of magnetic sensors and the fundamental study of physical phenomena related to magnetism.

Application

Interested candidates should apply through CNRS website including a CV; motivation letter and some references:

<https://emploi.cnrs.fr/Offres/CDD/UMR7198-MARTAI-100/Default.aspx?lang=EN>

Pre-selected candidates will be contacted for an interview.

Further information:

- J. Carlos Rojas-Sánchez (CNRS Researcher) : juan-carlos.rojas-sanchez@univ-lorraine.fr
- Sébastien Petit-Watelot (UL Enseignant chercheur) : sebastien.petit@univ-lorraine.fr



Funded by
the European Union



European Research Council
Established by the European Commission



MAGNETALLIEN