Call for applications

Junior Professor Chair - University of Caen Normandy

Institution: University of Caen Normandy
President: Lamri Adoui

Project Name: Experimental Nuclear Physics at Spiral2

Project Acronym: ExNuPhyS

Area of Research: Nuclear Physics
Keywords: Nuclear structure and reactions, Nuclear Data

Requirements: A PhD or equivalent degree or proof of scientific qualifications and experience deemed equivalent by the university. Postdoctoral experience of at least 3 years outside of France is highly desirable.

Laboratory: LPC Caen

Institutional Strategy

Beginning in 2021 the University of Caen Normandy has constructed a strategy around five axes: the prioritisation of research, the development of a European and international ambition, becoming a major player in the Region, the placement of students' success at the heart of its actions and the personalisation of training and future skills. As such, the university intends to strengthen its position in research and training so as to position itself as a leader at the national and international levels as well as a major player in international collaborations that can make significant contributions to the major societal challenges of the 21st century.

Consequently, the university has decided to adopt an ambitious policy of talent management, with the goals of attracting young talent and to improving living and working conditions (HRS4R, Euraxess, post-doctoral support, Masters level support, reduction of teaching loads, etc.). This strategy is accompanied by the recruitment of doctoral students, post-doctoral researchers, Assistant Professors and Professors.

The Junior Professorship ("CPJ") programme is a logical extension of this strategy and is a key tool for the university in its efforts to strengthen its international appeal and reinforce and develop the excellence of its research. The University of Caen Normandy is therefore entering into this programme, which will play a key role in accelerating its development strategy, with a strong sense of purpose.

In this context the CPJ has a three-fold ambition:

- To strengthen the attractiveness and visibility of research in priority sectors that are highly competitive internationally.
- To respond to the need to enhance the internationalisation of Masters' degree courses.
- To promote inter- and/or multi-disciplinary research.

The university aims to use the CPJ programme to recruit young researchers who have begun to establish themselves professionally and who will be attracted by a long-term contract and the prospect of being granted tenure within 4 to 6 years. The researchers targeted will be expected to have solid international experience and exhibit very good potential to manage a research team, as well as capacities to be involved in European and/or international projects. In this context, funding via the ERC is expected to be targeted. It should also be noted that the Normandy Region will provide significant additional support, through the provision of financial resources up to a level matching those that will be allocated by the ANR.

The CPJs are intended to attract the best candidates and offering them optimal conditions to establish themselves. They may also support the development of projects that will bring about the "excellence of tomorrow" at the interface of different fields related to societal issues.

Strategy of the host laboratory

Following the construction of the GANIL heavy-ion accelerator facility in Caen, which began operations in the mid 1980's, nuclear physics became the major area of research at LPC Caen. In a first instance, this research concentrated on heavy-ion collisions to investigate the equation of state and properties of nuclear matter and was followed in the early 1990s by the development of activities centred on study of the structure of the so-called "exotic" nuclei. Shortly thereafter, the research activities of the laboratory were expanded to include civilian nuclear applications (specifically aspects related to the nuclear fuel cycle) and medical applications (hadrontherapy). A third major area of research, dedicated to the study of the Standard Model through precision measurements in beta decay, was established in the 2000s. The majority of these areas of research have been pursued, at least initially, through experiments conducted at GANIL. The groups involved have supervised many PhD theses and published results in all the international recognised journals in the field, including Nature, and Physical Review Letters. The laboratories research is well recognised both nationally and internationally (see, for example, the CNRS Report of 2019, the Reports on the Future Perspectives of the IN2P3 (2021) and the NuPECC Long Range Plan 2017).

The recent commissioning of the Neutrons for Science Facility (NFS), the completion in the near future of the S3 spectrometer and the construction of the DESIR low-energy radioactive beam installation at GANIL/SPIRAL2 provides the laboratory with the opportunity to strengthen and expand its contributions to these world-class facilities. In addition to working closely with GANIL and other laboratories in France (eg., IJCLab, LP2IB, LPSC), groups at LPC have numerous active international collaborations (eg., RIBF-RIKEN, Japan; IKS-Leuven and SCK-CEN, Belgium; LNL and LNS-INFN, Italy; JYFL, Finland). In terms of the GANIL facilities, the presence of a locally based university scientist with a permanent position will be an extremely valuable asset for such state-off-the-art facilities, including in terms of contributing to their operation and that of the experimental setups as well as the training of students. LPC Caen in this context wishes to recruit a talented scientist with a background in experimental nuclear physics to make major contributions to the success, scientifically and technically, of these new facilities.

Research:

The research programme will involve contributing to one of the new SPIRAL2 facilities at GANIL – NFS or S3 and, when completed, DESIR – by making a major scientific contribution incorporating a well-developed technical aspect. In the next decade, these facilities are expected, within a competitive international context, to enhance greatly our understanding of many aspects of nuclear physics including, in particular, the following areas:

- Nuclear data – in particular that of relevance for reactor physics, through measurements made with NFS.
- The structure of exotic nuclei – most notably N=Z nuclei in the region of ^{100}Sn and heavy and superheavy nuclei using the S3-LEB installation coupled with to innovative techniques such as laser spectrometry using the IGJLIS method and mass measurements with an MR-ToF-MS device.
- Precision measurements in the future hall DESIR.

The CPJ will be expected to lead a major experimental project, supervise PhD students and post-doctoral fellows. This work will be carried out within the framework of international collaborations based around the SPIRAL2 installations in question. Additional activities at international facilities may also be envisaged.

Teaching

The University of Caen Normandy has been requested by the Region to increase its training in the field of nuclear energy in the context of the revival of nuclear energy generation as a source of decarbonised electricity. The CPJ will be required to contribute to the teaching of the experimental and applied aspects of nuclear energy and to invest in the continuing education and professional training programmes of the university. The teaching staff of LPC Caen have proposed an ambitious project to develop a technology centre for nuclear energy applications, which would cover all the practical training needs of the university and the engineering school (ENSICAEN) and would be open to collaborations with industry. The centre would provide state-of-the-art equipment, both in nuclear instrumentation and for simulation exercises, including augmented reality in collaboration with the CEMU (Multimedia Educations Centre). The CPJ, as an experienced experimentalist, will be involved in this project. In addition, he or she will carry out supervision of first and second year Masters level student projects.

Scientific Dissemination :

As the experimental programme of the CPJ will be carried out at world-class facilities using state-of-the-art instrumentation, results of significant impact for the international community are expected. The CPJ is therefore expected to have the opportunity to present these results at major international conferences and to publish them in high impact international journals.

Open Science:

All publications will be deposited with the HAL online repository as well as the arXiv. The data will be made accessible to the scientific community within a timeframe in line with CNRS and university policies.

Science and Society :

Web pages, dedicated to the CPJ and their research will be created as part of the laboratory's web site. The CPJ will also participate in outreach events organised by the laboratory and/or GANIL (including Open Days and the yearly science festival "Fête de la Science").

Indicators:

Measurable indicators over the course of the CPJ contract will comprise:

- Publications in top-level journals (Q1) – with at least 3 over the duration of the contract of the CPJ.
- Invitations to international conferences – at least 1 per year
- Grant proposals submitted to national (ANR, PEPR) and international (Horizon Europe, ERC) calls for funding.
- Supervision of at least 2 PhD theses during the CPJ, as well as first and/or second year Master's research projects and internships.

In addition, the CPJ is required to obtain his/her Habilitation ("HDR") before the end of the contract.

Application Deadline:

The deadline for applications is 11 September 2023 12h00 (Paris)

Interviews

All applicant selected on the short list will undergo an interview comprising a 20 minute presentation to the selection committee followed by 40 minutes for questions.