FULL-TIME ACADEMIC POSITION IN COMPUTATIONAL QUANTUM MECHANICS

ÉCOLE POLYTECHNIQUE DE BRUXELLES

Reference : 2017/Axxx
Application deadline:
Start date: 01/10/20xx

Job description

The research and teaching activities of the applicant will be conducted in the Nuclear Physics and Quantum Physics research unit, which is a joined research unit between the Sciences faculty and the École polytechnique de Bruxelles. In particular, his/her activities will be strongly connected to the Physics Engineering Master curriculum of the École polytechnique, which aims at forming engineers with a strong physics and applied mathematics background.

From the research point of view, the applicant should develop an original and top-quality international research in the field of computational quantum mechanics, i.e. in the theoretical description of physical systems based on quantum mechanics and requiring large-scale numerical simulations. In particular, the applicant could be a specialist of the few-body or N-body problems in atomic or nuclear physics, either aimed at the description of the structure of these objects, of their spectra, of their collisions, or of their use in the context of quantum simulations.

Though not mandatory, a connection of the applicant's previous research activities with the expertise developed in the Nuclear Physics and Quantum Physics research unit is a plus. In addition, possible collaborations, synergies and complementarities should be emphasized, as well as potential collaborations with other research groups of the École polytechnique and of the Sciences Faculty, in particular in quantum information and condensed-matter physics. The applicant should also plan to use the large scale computing facilities available at ULB through the CÉCI consortium and to interact with experts in numerical analysis.

Area of Research : Applied Physics

Educational and scientific goals :
the research mentioned above should strongly feed the pedagogical activities of the applicant. The possible lectures (see list below) should be based as much as possible on the modern trends in fundamental and applied research, both through the choice of topics covered and through the illustrative examples chosen. In particular, students should be made aware of the present status of complex numerical simulations based on quantum mechanics, given the power of present large-scale computing facilities. Another essential aspect is the supervision of student projects, master theses and PhD theses. For all these activities, the use of modern pedagogical techniques is a plus and self-questioning is a must, strongly encouraged by the ULB pedagogical assessment yearly setup.

Courses covered at the time of recruitment :
depending on previous recruitments and titular choices, the applicant might be involved in several of the following lectures, given here as an indication:

- PHYS-H-405 Introduction to nuclear, atomic & molecular physics
- PHYS-F-431 Quantum N-body problems
- PHYS-F-305 Physique des particules et physique nucléaire (partim)
- PHYS-F-463 Théorie quantique des collisions et application aux réactions nucléaires
- PHYS-F-304 Spectrophysique et astrophysique (partim)
- PHYS-H-402 Collective and cooperative phenomena in solids

In addition, the applicant might be involved, on a longer term, in the general Physics and Mathematics courses at the Bachelor level, in the École polytechnique and in other faculties (Solvay Business School, Medecine Faculty, Bio-Engineer School...), both in Brussels and Charleroi.

Qualifications required :

PhD Degree (with doctoral thesis) in Physics Engineering or Physics

Skills required

- Applicants should have at least 4 years of research experience at the time of their recruitment.
- Post-doctoral experience and an excellent scientific record are a plus.
- Exchange periods outside of the applicants' home institution (during or after their PhD) will be taken into consideration when evaluating applications.
- Applicants who do not speak French (level B2) may be granted a period of adaptation, but they must be able to teach in French at the end of the third year following their appointment.

Interested ?

For more information, please contact Mr Jean-Marc Sparenberg (telephone: +32 2 650 55 57 – E-mail: jmspar@ulb.ac.be).

Applications must be sent by e-mail to the rectorate of the Université Libre de Bruxelles (recteur@ulb.ac.be) and to the faculty deanship (le-doyen-polytech@ulb.ac.be).

They must include the following :
- an application letter
- a Curriculum vitae including a list of publications (a template can be downloaded at http://www.ulb.ac.be/tools/CV-type.rtf)
- any relevant documents showing 4 years of research experience
- a 7,000-character report (4 pages) presenting the applicant's research activities and a research project, including how these will integrate into ULB's research teams
- a teaching dossier including a 7,000-character report (4 pages) on the applicant's previous teaching activities and a teaching project for the first five years in this position; these must be relevant to the faculty and to the teaching profiles for the programmes to which the applicant is to contribute
- a note on the applicant's international achievements and projects (no more than 4 pages)
- the names and e-mail addresses of five referees (respecting the gender balance) who may be contacted by those in charge of evaluating applications. These referees should not have conflicts of interest because of family or emotional ties.

The appointment to the academic staff of ULB is made at "Premier Assistant" level, if the candidate has had a PhD for less than eight years (on 1 October of the year of appointment). If the candidate has had a PhD for eight or more years, on 1 October of the year of appointment, then the appointment is made

at "Chargé de Cours" level. As of their appointment, members of academic staff are authorised to use the honorary title of "Professeur".

By sending in their application, applicants acknowledge they have read and understood the additional information and the regulations relevant to research staff, available at the following address http://www.ulb.ac.be/emploi/academique.html.

n° de vacance : 2017/Axxx

Domaine : (liste Paysage)

Discipline : (au choix)

Poste(s) au cadre : 17-x-xxx-xxx (x) (x.xx ETP) / poste SAP

Références CoA : <Greffe>

Rattachement Enseignement : Département/Service (Mnémo + intitulé)

Rattachement Recherche : Centre de recherche/Unité de recherche (Mnémo + intitulé)

EURAXESS SPECIFIC INFORMATION

Main Research Field : (cf liste EURAXESS)

Sub Research Field : (cf liste EURAXESS - facultatif)

Required educational level: Phd Degree in (Degree Field – voir liste domaines EURAXESS)

Required Languages :

Français : (basic – good – excellent – native)

English : (basic – good –excellent – native)

'autre langue' : (basic – good –excellent – native)

Type of contract : temporary

Hours per week : 38

Required Research Experiences : (domaine – voir liste EURAXESS) : (nombre d'années d'expérience)

Researcher profile : Early stage researcher (0-4 years)

Experienced researcher - R3 (4 – 10 years) (vous pouvez laisser les 2 profils si vous le souhaitez)

Additional requirements :

[texte libre où l'on peut renseigner les domaines et disciplines non disponibles dans les listes Euraxess par exemple]