

## FULL-TIME RESEARCH AND TEACHING ASSISTANT POSITION

### IN QUANTUM PHYSICS

ECOLE POLYTECHNIQUE DE BRUXELLES

Reference : 2025/S130

Application deadline: 28/04/2025

Start date : 01/10/2025

### Job Description

Located in the heart of Europe, in a dynamic, urban and green district 20 minutes from the historic centre of Brussels, the ULB École polytechnique offers a multicultural, friendly and highly participative working environment. In partnership with the École de Bioingénierie de Bruxelles, the School offers no fewer than three Bachelor degrees and 11 Master degrees. Each year, it trains more than 200 Civil Engineers and Bioengineers capable of playing an active, responsible and critical role in a changing world. Committed at local, regional and international level, the School actively contributes to the progress and well-being of society through applied and fundamental research of the highest standard.

#### The department:

The quantum physics department at the École polytechnique de Bruxelles is part of an interfaculty entity with the Faculty of Sciences, the Nuclear Physics and Quantum Physics research unit. The research focuses on various systems that are important in low-energy nuclear physics and atomic physics, both in terms of their structure (halo nuclei, antiprotonic atoms, etc.) and the reactions in which they are involved (nuclear astrophysics, interactions with detectors, etc.).

To this end, the group carries out quantum physics calculations covering both fundamental aspects (the measurement problem) and the development of new numerical techniques (microscopic cluster models, ab initio few-body approaches, Lagrange mesh calculations, reaction matrix, etc.) and mathematics (supersymmetric quantum mechanics, inversion techniques, etc.).

In the field of nuclear physics, in parallel with these theoretical developments, the group carries out experimental work aimed at understanding the structure of nuclei and nuclear reactions in different regions of the isotope table. In particular, studies of reactions with light nuclei use radioactive beams and lead to the measurement of cross sections and reaction rates, quantities for which the group contributes to modelling.

This work, both theoretical and experimental, is carried out in collaboration with various international research groups and laboratories (Italy, Japan, Korea, Canada, South Africa, etc.).

Further information on current research topics is available on the research unit website:

<http://pnpq.ulb.be>

In parallel with these research activities, the École polytechnique Quantum Physics Department is responsible for teaching courses in quantum and statistical physics, atomic physics and mathematics relating to linear algebra, geometry and numerical analysis, both at Bachelor level in Engineering and at Master level in Physics Engineering. The department is also involved in the special entrance examination for the Bachelor degree in Engineering and in supervising student projects and Master theses.

## Job Description

The Assistant mandate is divided equally between research work leading to a doctoral thesis and teaching work. This mandate is granted for an initial term of 2 years, and is renewable every 2 years after receiving the opinion of the competent bodies (the doctoral thesis committee for the research component and the pedagogy committee for the teaching component), for a maximum total duration of 6 years.

The thesis work consists of original research, preferably linked to the activities of the research unit and carried out under the supervision of one of its academic members, leading to the defence of a doctoral thesis in Applied Sciences.

The teaching work consists mainly of supervising, developing and coordinating exercise sessions for courses in mathematics and quantum physics in the Bachelor programme at the École polytechnique de Bruxelles, as well as helping to prepare, supervise and mark examinations, including the special entrance examination. You will also be required to help supervise exercise sessions for the BA1 introductory course in applied sciences, as well as supervising Bachelor projects, advanced quantum mechanics exercise sessions and Master theses. The total hourly volume of these teaching activities is capped at the equivalent of 300 hours of student exercises per year, most of which taking place in Brussels (Solbosch campus).

Administrative management, in particular coordinating the team of part-time teaching assistants, is also expected.

## Skills required

- Research: excellent technical skills (mathematics, physics, computing, etc.), creativity, autonomy and motivation. A minimum level of C1 in English is required.
- Teaching: excellent communication skills (listening, teaching, etc.) and organisational skills (reliability, punctuality, efficiency, etc.). A minimum level of C1 in French is required.

## Courses covered

Supervision will potentially and among others be required for the following courses:

- MATH-H1003 : Algèbre linéaire et géométrie
- PHYS-H200 : Physique quantique et statistique
- PHYS-H401 : Quantum Mechanics II (en anglais)
- TRAN-H100 : Introduction aux Sciences appliquées
- TRAN-H201 : Projet multidisciplinaire II et gestion de projet
- PROJ-H418 : Projet chef de projet

## Interested ?

For more information, please contact Professors Jean-Marc Sparenberg (phone : +32 2 650 55 57 – email : [jmspar@ulb.ac.be](mailto:jmspar@ulb.ac.be)) or J r my Dohet-Eraly (phone : + 32 2 650 55 61 – email : [jdoheter@ulb.ac.be](mailto:jdoheter@ulb.ac.be)).

Your application will consist of a Curriculum Vitae (*if you wish, a standard CV can be downloaded from the website: <https://www.ulb.be/fr/documents-officiels/emplois-academiques-et-scientifiques-cv-type>*) and a document completed using the template available at this URL address <https://www.ulb.be/fr/documents-officiels/4e-applic-form-assistant-docx>.

This template structures your application by including the following elements:

- an application letter
- a note on the applicant's PhD research project (4 pages)
- two letters of reference

Incomplete applications or applications that do not use the template provided will not be examined by the selection committee.

## Where to go to apply?

Click here: <https://jobs.ulb.be/job-invite/1603/?isInternalUser=true>

For any connection problems or questions about our application, consult our FAQ : [e-recrut-mode-d-emploi-candidat-en-1734942996246-pdf](#)

## Equal opportunities policy

ULB's personnel management policy is geared towards diversity and equal opportunities.

We recruit candidates on the basis of their skills, irrespective of age, gender, sexual orientation, origin, nationality, beliefs, disability, etc.

Would you like to be provided with reasonable accommodation in the selection procedure because of a disability, disorder, or illness? Please contact Marie Botty, the person in charge of diversity aspects for the academic and scientific staff ([marie.botty@ulb.be](mailto:marie.botty@ulb.be)). Be assured of the confidentiality of this information.

More details on the ULB gender and diversity policy are available at <https://www.ulb.be/en/about-ulb/gender-equality-at-ulb>.

You will find all the regulations relating to research careers on our site at <http://www.ulb.ac.be/emploi/academique.html>.