

## Joint Tenure-Track Professorship in Computational Physics: Light/matter interactions or non-equilibrium quantum dynamics

The Faculty of Science and Medicine of the University of Fribourg, Switzerland, and the Paul Scherrer Institute (PSI) in Villigen, announce the opening of a joint Assistant Professor position in the field of **light/matter interactions or non-equilibrium quantum dynamics**.

### GENERAL CONDITIONS

The Faculty of Science and Medicine of the University of Fribourg and the Paul Scherrer Institute (PSI) jointly invite applications for a tenure-track Assistant Professor position in Computational Physics in the Department of Physics, and in the Scientific Computing, Theory and Data Division of the Paul Scherrer Institute (PSI).

The selected candidate must have an outstanding record of successful independent research in the field of **light/matter interactions or non-equilibrium quantum dynamics**. She/he is expected to build synergies with the Department of Physics in Fribourg and with the Paul Scherrer Institute (PSI) and its various large-scale research facilities, in particular the Swiss Free Electron Laser. The candidate is expected to develop a vigorous, internationally recognized research program that is supported by a significant amount of external funding, and to lead the research activities of a group of graduate students/postgraduate researchers.

The future appointee is expected to participate in the teaching of theoretical physics courses in Fribourg (50% teaching load). The candidate should be able to teach in English as well as, at the Bachelor level, in one or both of the two official languages of the University, French or German (after an appropriate learning period, if necessary).

**The University of Fribourg and PSI are equal opportunity employers and strive towards gender balance and diversity at all levels.**

Having signed the DORA declaration, the University of Fribourg emphasizes qualitative assessment of academic achievement.

### APPLICATION PROCEDURE

Hard copies of the following documents should be forwarded to the mailing address below:

1. a cover letter mentioning this position for which the candidate is applying (the opening is for a tenure-track professor in the field of "**light/matter interactions or non-equilibrium quantum dynamics**")
2. a complete curriculum vitae, including a copy of the diploma of the highest degree attained (typically, PhD)
3. a complete list of publications (highlighting specifically the 5 most important contributions)
4. a detailed record of teaching experience
5. a record of past and present funding
6. a description of the research that the candidate intends to conduct at the University of Fribourg and at PSI (5 pages max)
7. the names and addresses (postal and e-mail) of three persons who could be contacted as referees

**Deadline: the applications have to reach the Dean's office before 15 January 2022.**

**Prof. Gregor Rainer**  
Dean of the Faculty of Science and Medicine  
University of Fribourg  
MIS 09 – Rue de Rome 3  
CH-1700 FRIBOURG

Please also send an **electronic version of the application** ("**name.pdf**", points 1) to 7) above) and PDF versions of the 5 most relevant publications ("**name-papers.pdf**") to the Faculty Administrator at the Dean's Office

([franziska.schumacher@unifr.ch](mailto:franziska.schumacher@unifr.ch); CC: [dean-scimed@unifr.ch](mailto:dean-scimed@unifr.ch)) and specify as subject of the email “PROFESSOR POSITION IN light/matter interactions or non-equilibrium quantum dynamics”).

## ACADEMIC ENVIRONMENT AT UNIFR

### Faculty, Sections and Departments

The Science Section belongs to a joint Faculty of Science and Medicine of the University of Fribourg, which facilitates cooperation between medicine and basic science disciplines such as physics, chemistry or biology and offers many possibilities for collaboration and shared use of infrastructure. The candidate will join the Department of Physics.

The six departments of the Science section are:

- Physics
- Biology
- Chemistry
- Geoscience
- Informatics
- Mathematics

The Section is led by a president who is elected by the other professors and serves for a 2 year period. Major decisions are taken by the Faculty Council and/or Section Councils, which include teaching staff and student representatives.

Some research fields in the Chemistry and Physics departments partially overlap with the research activities at the nearby privately funded Adolphe Merkle Institute (AMI), which provides opportunities for collaborations and the joint use of infrastructure.

### Research focus

The research in the Department of Physics currently encompasses a broad spectrum of topics, including soft matter (both experiment and theory), photonics and nanosystems, atomic physics, solid state (magnetism and superconductivity, electron spectroscopy), computational physics and theoretical interdisciplinary physics (see <https://www3.unifr.ch/phys/en/research/>).

### Teaching and Languages

Besides the Bachelor, the Master and PhD programmes in Physics which conform to the Bologna principles, the Department of Physics offers service teaching to other curricula in natural sciences.

The University of Fribourg is bilingual and teaching at the Bachelor level is exclusively in French or/and German. Students can choose to take their exams in either language. At the Master and PhD levels, the classes are generally taught in English. Candidates must therefore be able to teach in French or German and in English and to have colloquial skills in all three languages (or be willing to acquire such skills within a few years).

The mandatory teaching load of a professor at the University of Fribourg is 6 hours per week (6h x 14 weeks x 2 semester = 168h).

### Administrative structure

The Faculty of Science and Medicine is organized in two sections: a Science Section and a Medicine Section.

The Science Section is composed of six departments and three institutes (see <https://www3.unifr.ch/scimed/fr/sci/>); the Medicine Section is composed of five departments and one institute (see <https://www3.unifr.ch/scimed/fr/med/>).

Presently the Department of Physics employs 7 professors that are heading independent research groups (4 in experimental physics and 3 in theoretical physics). In addition, one junior professor in experimental condensed matter physics, funded by the Swiss National Science Foundation (SNSF), has been active in the Department since Spring 2018. Major decisions are taken by the Department Council that comprises the teaching staff and representatives of the technical/administrative staff and students.

## RESEARCH ENVIRONMENT AT PSI

The major role of computational science at the forefront of physics research is underscored by the creation at PSI of the new division “Scientific Computing, Theory and Data”, driven by the realization that simulations, modeling and theory have become an integral part of nearly all fundamental and applied science projects. The goals of this division are to develop the modelling know-how and computing resources for the science, engineering and accelerator program at PSI, and to provide conceptual and practical guidance and support to new science initiatives at PSI, such as the SwissFEL or quantum technologies.

The new professor will be part of the new division, in close synergy with the new Laboratories for Materials Simulations (LMS), Theoretical and Computational Physics (LTC), and Simulation and Modelling (LSM), and with a group in LMS.

## INFRASTRUCTURE, POSITIONS AND FUNDING

### Infrastructure

#### Location

The **Department of Physics** is centrally located in a dedicated building on the Pérolles campus, within short walking distance to the other buildings of the Faculty of Science and Medicine. This campus also hosts the School of Engineering and Architecture and the Adolphe Merkle Institute that focuses on research and education in the domain of soft nanomaterials. The appointee will have access to the infrastructure of the department (secretariat and technical pool) and of the Faculty of Science and Medicine (library, computer cluster, shop for scientific materials and chemicals etc.).

The **Paul Scherrer Institute (PSI)**, based in Villigen on the River Aare, is the largest research institute for natural and engineering sciences in Switzerland, employing 2100 people conducting cutting-edge research in three main fields: matter and materials, energy and the environment and human health. PSI develops, builds and operates complex large research facilities. The “Scientific Computing, Theory and Data” division will be housed in the West side of the campus.

#### Computers

The University of Fribourg’s computer service supplies all Departmental members (academic and technical staff) with state-of-the-art PCs or Macs and appropriate office, reference, statistical and graphics software. Specific research software can also be supported for research purposes. The Physics department also has access to a local computer cluster to deal with larger computational tasks.

At PSI, the “Scientific Computing, Theory and Data” division will have access to a powerful computing infrastructure.

### Financial support

The new professor will receive a share of the physics department’s operating budget, and additional research funds from PSI and from the MARVEL NCCR. The appointee is, however, expected to actively seek additional external funding to cover the bulk of the research expenses. The new professor will receive a start-up grant for an extension of the local computer cluster in Fribourg.

## CONTACT for further information

<p>Prof. Philipp Werner (<a href="mailto:philipp.werner@unifr.ch">philipp.werner@unifr.ch</a>) Department of Physics / University of Fribourg tel: +41 26 300 9134</p>	<p>Prof. Nicola Marzari (<a href="mailto:nicola.marzari@epfl.ch">nicola.marzari@epfl.ch</a>) Laboratory of Theory and Simulation of Materials / EPFL and Director of NCCR MARVEL tel: + 41 21 693 1129</p>
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