

Open post-doctoral position: Conceiving hardware to investigate the physics of the Sun.

Reference: Prf-2020-041_CHIPS#2

Start date: December 1, 2022.

Description of the position

The Centre Spatial de Liège of the University of Liège and the Royal Observatory of Belgium invite applications for a **full-time post-doctoral position** to fill their profile CHIPS – Conceiving Hardware to Investigate the Physics of the Sun, open in the framework of the Belgian federal FED-tWIN programme (Programme of sustainable research cooperation between the federal scientific institutes (FSI) and the universities).

This position involves a part time (50 %) scientific position at the Royal Observatory of Belgium, and a complementary part time (50 %) post-doctoral position at the Centre Spatial de Liège of the University of Liège in the field of space instrumentation.

Work environment

The position offered is in an ideal research environment to develop projects with international space agencies and with both scientific and industrial partners.

The Solar Influences Data analysis Centre (SIDC) of the Royal Observatory of Belgium (ROB) has its research focus on the analysis of solar imagery from space and from the ground, with goal to monitor solar activity and to perform fundamental solar physics research. The SIDC is the PI institute for instruments onboard the PROBA2, PROBA-3 and Solar Orbiter space missions. It also harbours the World Data Centre for the Sunspot Index and a Space Weather forecast centre. The group consists of 4 permanent staff researchers, 31 contractual researchers, 7 PhD students and 6 support staff.

At the University of Liège, the successful candidate will be affiliated with the Centre Spatial de Liège (CSL), which is an applied research centre of the University focusing on the design of space observation instruments. In addition, the CSL has a state-of-the-art environmental test centre serving the European Space Agency (ESA), the space industry and regional companies. The CSL has been contributing to numerous missions to observe the cosmos, the earth and its atmosphere, meteorology, developed largely by ESA and to a lesser extent by NASA. In particular, it has a long-standing expertise in leading the development of space solar instruments, *e.g.* onboard the SOHO, PROBA2, PROBA-3, and Solar Orbiter missions. The CSL has developed software for satellites equipped with radar, built part of an instrument or been the prime contractor in the construction of an instrument and, in many cases, carried out the very delicate and sometimes very long tests, under space conditions, of many instruments and even entire satellites. Along these missions, the about 100 engineers, physicists and technicians of the Centre Spatial de Liège have developed a strong expertise in extremely varied fields such as optics, electronics, lasers and non-destructive testing of various materials, thermics, surface analysis and structure, ...

A detailed description of the Centre Spatial de Liège, the Royal Observatory of Belgium and their activities can be found on their websites <http://www.csl.uliege.be>, <https://www.astro.oma.be/en/>, and <http://sidc.be/aboutSIDC>.

Research activities

The general objective of the FED-tWIN Profile is to conceive the next generation of solar space-borne instrumentation by pioneering new technologies and designs optimized for future solar physics. The ultimate goal of the FED-tWIN expert is to prepare the concept of new space-borne instruments to observe the Sun for the upcoming mission calls in the science programme of the European Space Agency (ESA).

A particular attention will be paid to the technological developments required to measure the magnetic field in the solar corona (spectro-polarimetry), to improve the solar coronagraphy, to provide extreme-violet (EUV) imaging of the solar corona at very high spatial resolution and to measure flare energy in a broad spectral range.

The successful candidate is expected to take a leading role internationally in the conception and development of space instruments for solar physics missions, to acquire competitive research funding, to supervise PhD project, and to aim at excellence in research *i.e.* by publishing in outstanding journals and giving presentations at the main conferences in the field.

Service activities

The selected candidate will participate in service activities to ensure the visibility and promotion of the activities developed at the Royal Observatory of Belgium and at the Centre Spatial de Liège. He/she will be prepared to provide scientific and expert services and outreach in the two institutes, both towards society in general and to internal committees.

He/she will develop a solid and effective collaboration between the University of Liège (Centre Spatial de Liège) and the Royal Observatory of Belgium.

Required qualifications

The candidate will hold a PhD with thesis in physics/astrophysics or engineering/instrumental optics. He/she will have international experience and proven track record in research in observational solar physics or solar instrumentation, in particular in space-borne remote-sensing solar instrumentation.

A successful candidate will have strong scientific project management skills, organisational skills, a cooperative attitude, leadership capacities and be committed to intensive collaboration between the two institutes. He/she will also have developed the related technical skills, like programming (e.g. in Interactive Data Language, Python, Matlab), or optical calculations (e.g. sequential and non-sequential ray-tracing, Fourier optics).

Proficiency in written and spoken English is required; knowledge of French is an advantage.

The FED-tWIN project requires that applicants have obtained their PhD no more than 12 years before the job application submission date. This period is extended with 1 year for each long-term leave for a child or illness.

Selection procedure

A selection committee appointed by the Centre Spatial de Liège and the Royal Observatory of Belgium with both internal staff members and external experts will assess the applications files.

In a second step, short-listed applicants will be invited for an interview during which they will present their research project and discuss with the selection committee.

The University of Liège and the Royal Observatory of Belgium are equal opportunity employers that strive to foster diversity. All qualified applications will receive consideration for employment without regard to gender, sexual orientation, origin, beliefs, disability, or nationality.

Application procedure

Candidates are requested to send their application electronically to **Dr. Jérôme Loicq** (j.loicq@uliege.be) and **Dr. Andrei Zhukov** (Andrei.Zhukov@sidc.be). The deadline for applications is on **October 1, 2022**.

The following documents are required by the final date for applications:

- a motivation letter,
- a Curriculum Vitae including a complete list of publications,
- a list of 5 key publications and for each a short a description of their contribution to the state of the art,
- a summary of past and ongoing research, as well as a statement on future research including the planned integration within the project,
- a copy of five most representative publications,
- full copies of certificates/diplomas.

Documents may be delivered either in French or in English and must be provided in electronic form (PDF).

Terms and conditions of employment

The selected candidate will receive a part-time (50 %) position as SW2 scientific staff at ROB (contract of undetermined duration) and a part-time (50 %) post-doctoral position at the Centre Spatial de Liège, University of Liège (contract of undetermined duration).

A progress evaluation will be organized annually.

Information

For additional information about research opportunities at CSL and ROB and for specific questions about the CHIPS scientific profile, please contact Prof. Jérôme Loicq, e-mail: j.loicq@uliege.be, or Dr. Andrei Zhukov, e-mail: Andrei.Zhukov@sidc.be

For any additional administrative information, please contact **Prof. Serge Habraken** – tel.: +32 4 382 46 35 – shabraken@uliege.be, or the **HR service at ROB** – tel +32 2 790 39 94 – hrrrob@oma.be

Salary and benefits

The 50% appointment at the Royal Observatory of Belgium will be a contract of undetermined duration in the salary scale SW2 (Work Leader).

Remuneration scales at the Centre Spatial de Liège, University of Liège, and how they are applied are available from the University's Human Resources department: **Mrs. Ludivine Depas** – tel.: +32 4 366 52 04 – Ludivine.Depas@uliege.be