# Institut "Jožef Stefan", Ljubljana, Slovenija

| | |
|---|---|
| **Job Code** | F9-2025-ESR-2 |
| **Job Title:** | Postdoctoral position |
| **Department:** | Experimental Particle Physics |

**Postdoc Position in PET Instrumentation and Imaging at Jožef Stefan Institute**

The **Experimental High-Energy Physics Group** https://www-f9.ijs.si/en/ at the **Jožef Stefan Institute (JSI)** https://www.ijs.si/ijsw invites applications for a **fully funded, three-year early-stage researcher position** starting **1 October 2025** (a later start date may be negotiable). The selected candidate will engage in cutting-edge research on **PET instrumentation** and/or **advanced image reconstruction methods for PET imaging**, contributing to the group's dynamic and rapidly evolving research programme.

The researcher will work under the supervision of **Prof. Dr. Rok Pestotnik**, coordinator of the EIC-Pathfinder project *PetVision* *https://petvision.org* , and **Prof. Dr. Peter Križan**, principal investigator of the ERC Advanced Grant *FAIME* *https://faime.ijs.si* . The successful candidate will join a multidisciplinary team at the forefront of **time-of-flight positron-emission tomography (TOF-PET)** development https://photodetectors.ijs.si/ . The group designs novel detectors based on fast scintillation and Cherenkov light and creates state-of-the-art image reconstruction algorithms that leverage ultra-precise timing capabilities.

The position is embedded within a vibrant international research network that includes the **University of Ljubljana**, **Yale University**, **CERN**, **University of Barcelona**, **Fondazione Bruno Kessler**, **I3M-CSIC**, **Oncovision**, and **MRI-TUM Munich**. The role offers frequent short-term research visits to partner institutions and opportunities to present work at leading conferences, fostering both intellectual growth and the development of an independent research profile. Day-to-day work will take place at **JSI in Ljubljana**.

**Qualifications**

Applicants must hold a **PhD (by the start date)** in **Physics**, **Biomedical Engineering**, **Electrical Engineering**, or a closely related discipline. Candidates with hands-on experience in radiation detector development (e.g. scintillators, SiPMs, MCP-PMTs, ASICs), PET or particle-physics instrumentation, and/or image reconstruction algorithms and data analysis, will be considered especially strong.

**Application Procedure**

To apply, please fill out the form at https://forms.gle/RVYTxPxZMN3ut1jm6
And upload a **single PDF** containing:

- Your **curriculum vitae**,
- a **statement of research experience**, and
- a **cover letter** detailing your motivation for applying.

In addition, please arrange for **at least two letters of reference** to be sent directly to. **f9-jobs@ijs.si**.

**Application deadline: 15 August 2025**

Applications received by this date will be given full consideration. The position will remain open until filled.

**More information:** https://www-f9.ijs.si/~rok/hr/2025-JSI-F9-Postdoc-JobPost.pdf

## Job Description

| | |
|---|---|
| **Job Code** | F9-2025-ESR-2 |
| **Job Title:** | Postdoc Researcher |
| **Department:** | Experimental Particle Physics |

## Job Purpose

To advance detector and reconstruction technologies that improve timing resolution and quantitative accuracy in TOF-PET, thereby enabling disruptive innovations in pre-clinical and clinical medical imaging.

## We offer

- A full-time (40 hours/week) Early-Stage Researcher position.
- The employment contract is for 3 years with a three-month probation period.
- Competitive salary with paid contributions for medical, dental, and retirement insurance.
- Paid vacation days and public holidays.
- Support for family life, including possible access to public kindergartens and schools.
- Opportunities for international collaboration with partner institutions.
- Access to high-quality laboratory infrastructure and mentorship within a world-class research environment at the Jožef Stefan Institute.
- IJS is a non-discriminatory, inclusive employer committed to fostering diversity in science.

## Main responsibilities

- Take a leading role in developing and optimising high-timing-performance PET detector modules based on fast scintillators and/or Cherenkov emitters.
- Design, implement, and validate image-reconstruction algorithms that exploit sub-100-ps coincidence-time resolution.
- Publish results in peer-reviewed journals, and present findings at international conferences and collaboration meetings.
- Support broader group activities, including knowledge transfer and the informal mentoring of undergraduate and MSc students.

## Required Knowledge, Skills and Experience

| Attribute | Essential | Desirable |
|---|---|---|
| **Education & Training** | PhD (by start date) in Physics, Biomedical Engineering, Electrical Engineering, or a closely related discipline. | Formal coursework or additional certificates in medical imaging, radiation detection, or nuclear instrumentation. |
| **Knowledge & Experience** | Research activity in radiation-detector instrumentation and/or tomographic image-reconstruction methods across nuclear and medical imaging modalities. | Practical work with fast scintillators and Cherenkov detectors; familiarity with SiPMs, MCP-PMTs, or ASIC front-ends; experience with Monte Carlo simulations (GATE/Geant4), FPGA-based readouts, or clinical imaging systems. |

| | | |
|---|---|---|
| Skills | Practical skills in lab work, programming (e.g. Python, C++) and data interpretation.<br><br>Good written and verbal communication.<br><br>Motivation for teamwork and international collaboration.<br><br>Ability to maintain accurate and up to date records<br><br>Ability to organise and prioritise own work and organise research within the project timetable | Working knowledge of statistical modelling, uncertainty quantification, and machine-learning methods applied to imaging or detector data.<br><br>Ability to write clear technical documentation, and outreach material for both specialist and non-specialist audiences. |

## Dimensions

- Actively participate in regular group meetings and teleconferences with international collaborators, contributing to shared documentation and software repositories.
- Enhance the research environment at the Jožef Stefan Institute by participating in seminars, journal clubs, and informal mentoring sessions.
- Present work at collaboration meetings, workshops, and international conferences

## Additional Information

- The Jožef Stefan Institute and the University of Ljubljana have a long-standing history of developing photon detectors and associated instrumentation for high-energy physics and medical imaging.
- The position is ideal for postdoctoral researchers who are enthusiastic about experimental techniques, detector physics, high-performance instrumentation, and related data acquisition and image reconstruction software.
- If you haven't been to Ljubljana before, it is a vibrant, English-speaking, and easy-to-navigate capital with excellent road access to the Alps, the Adriatic, and places such as Venice, Vienna, and Munich. The capital is rich in cultural events throughout the year, while Slovenia is an outdoor fairy tale for those who enjoy spending time in untouched nature. Access from sea to ski slopes is within an hour’s drive, while the culinary offer and wine regions are outstanding.

## Key Job hazard information specific to the role

- Work may involve using lasers, high-voltage systems, and radiation sources (with appropriate safety training).
- International travel to partner institutions may be required.