



## INTERNSHIP OFFER

Ref. No. CH-2024-000041

### Internship Host Information

**Internship Host:** Paul Scherrer Institut  
Forschungsstrasse 111  
5232 Villigen PSI  
Switzerland

**Website:** www.psi.ch

**Location of placement:** Villigen PSI  
**Nearest airport:** Zurich  
**Working hours per week:** 42.0  
**Working hours per day:** 8.4

**Number of employees:** 2200  
**Business or products:** Research

### Student Required

**General Discipline:** PHYSICS  
**Field of Study:** Nuclear Physics.

**Completed years of study:** 2  
**Student status requirements:** Enrolled during internship; with EU/EFTA passport also possible between BSc and MSc  
**Language required:** English Good (B1, B2)

**Required Qualifications and Skills:**  
Linux

**Other requirements:**  
Experience in: radiation detectors, gamma spectroscopy, Geant4 toolkit;  
Knowledge of the Python and/or C++ programming language; Soft Skills: willingness to learn, high motivation, exact way of working

Knowledge of radiation detection techniques,  
experience in using the Linux operating system

### Internship Offered

The Paul Scherrer Institute PSI is the largest research institute for natural and engineering sciences within Switzerland. We perform cutting-edge research in the fields of future technologies, energy and climate, health innovation and fundamentals of nature. By performing fundamental and applied research, we work on sustainable solutions for major challenges facing society, science and economy. PSI is committed to the training of future generations. Therefore, about one quarter of our staff are post-docs, post-graduates or apprentices. Altogether, PSI employs 2200 people.

**Project:** Development and validation of HPGe-detector models for Monte Carlo simulations  
Operating particle accelerator facilities and nuclear installations is accompanied by ionizing radiation, which can occur during and after operation. This radiation can cover a wide range of energies and different types of particles. The gold standard for the measurement and characterization of gamma radiation are high-purity Germanium (HPGe) detectors. The quantitative analysis of the data measured with these detectors requires an energy and geometry dependent efficiency correction. This correction can be obtained using particle transport simulations based on Monte Carlo techniques. The accuracy of the corrections relies on a realistic geometry model of the measurement setup and the HPGe detector. In addition, experimental and theoretical validations are crucial to minimize systematic uncertainties.

We seek a student who will

- develop geometric models of HPGe-detectors and measurement setups
- perform Monte Carlo simulations
- perform measurements using HPGe-detectors
- compare results with reference measurements and other methods

**Number of weeks offered:** 12 - 16

**Within the months:** 01-JUN-2024 - 20-DEC-2024

**Or within:** -

**Company closed within:** -

**Working environment:** Research and development

**Gross pay:** 2100 CHF / Month

**Deduction to be expected:** approx. 10 % Social security AHV/IV

**Payment method / time of first / payment:**

**Latest possible start date:**

### Accommodation

**Canteen at work:** Yes

**Expected type of accommodation:** Guest house

**Accommodation will be arranged by:** Employer

**Estimated cost of lodging:** 900 CHF / Month

**Estimated cost of living incl. lodging:** 1750 CHF / Month

### Additional Information

Students with any NON-EU/EFTA nationality need for the visa and work permit an official letter from their university, confirming that the internship is compulsory (IAESTE Switzerland will apply for them). Due to the visa processing time, a start is not realistic before July for those passport holders.

### Nomination Information

**Deadline for nomination:** 05-MAY-2024

**Date:** 18-APR-2024

**On behalf of receiving country:**

IAESTE Switzerland