



PSI

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 2300 people.

For the PSI Center for Accelerator Science and Engineering we are looking for a

Trainee for the visualization of two-phase flow in cryogenic pulsating heat pipes

Your tasks

For superconducting magnet applications in particle accelerators, a highly efficient cooling device working in cryogenic conditions is crucial. Pulsating Heat Pipes (PHPs) are promising candidates which, combined with a cryocooler, will cool superconducting magnets at cryogenic temperature (in this case ~ 30 K). The principle is to transfer heat from an evaporator to a condenser using phase change and oscillations of vapor bubbles and liquid slugs circulating in a serpentine tube. The visualization of this two-phase flow is an important tool to better understand, characterize and model cryogenic PHPs, which is the aim of this internship project.

Your tasks will include:

- Conduct a literature survey on the state of research on the visualization of cryogenic PHPs
- Develop or use a code for image processing of two-phase flow visualization (e.g. determination of the flow pattern, detection of vapor and liquid interfaces, estimation of filling ratios, film thickness, fluid velocities, dominant frequency of oscillation motions, correlation to thermal performance)
- Participate to experimentally visualize a transparent pulsating heat pipe at cryogenic temperature using neon as working fluid
- Analyze the results (e.g. image processing) and write an internship report

Your profile

- You are a student in physics or engineering, and you are at least in your first year of Master study
- Ideally, you have already gained knowledge in fluid dynamics, heat and mass transfer, image processing or code development
- As a team-oriented and communicative person you enjoy working in an interdisciplinary group
- Good English knowledge is required
- You have not yet completed your Master's thesis

We offer

Our institution is based on an interdisciplinary, innovative and dynamic collaboration.

The contract will be limited to 3 months.

Paul Scherrer Institute
Human Resources Management
Lara Essig
5232 Villigen PSI, Switzerland
www.psi.ch

For further information, please contact Dr Carolin Zoller, phone +41 56 310 56 19, or Quentin Gorit, phone +41 56 310 37 27.

Please submit your application **online** for the position as a Trainee (index no. 8433-T1).

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