**PhD position in medical physics**

**Description**

The Institute of Radiation Physics (IRA), part of radiology department of the University Hospital (CHUV) and the University of Lausanne (UNIL), develops its activities in the fields of ionizing radiation in medicine (medical physics) and the protection of workers and the public against ionizing radiation (health physics).

An emerging radiotherapy approach is the use of Very High Energy Electrons (VHEE) as an alternative to conventional X-ray beams. The unique physical properties of VHEE suggest that this modality may enable more effective tumour eradication and/or a substantial reduction in severe radiation-induced side effects. Furthermore, growing evidence indicates that irradiation at ultrahigh dose rates can spare normal tissues while maintaining tumour control. This phenomenon, known as the FLASH effect, is currently the focus of intense research aimed at translating FLASH radiotherapy (FLASH-RT) into clinical practice.

The PhD student will conduct a research project in the field of VHEE-FLASH radiotherapy, a collaboration between CHUV, Erasmus MC (Rotterdam), and Delft University of Technology. The project, entitled 'Exploration and Optimization of Very High-Energy Electron Beam Therapy – A Promising New Cancer Treatment Modality', is funded by the Dutch Research Council for a period of five years.

Building on and extending the tools developed in Rotterdam and Delft, the PhD student will optimize and evaluate the performance of VHEE-FLASH radiotherapy in comparison with standard-of-care modalities. The research will focus on developing solutions that are compatible with ultrafast dose delivery on FLASH time scales, while minimizing both the loss of dosimetric conformity and the technical complexity of VHEE-FLASH systems. Furthermore, the student will assess novel delivery concepts by jointly optimizing VHEE dose distributions and exploiting the potential FLASH effect.

The project will be carried out at CHUV within the framework of the doctoral school of UNIL. It involves close collaboration with a PhD candidate at TU Delft working on dose computation, and a PhD candidate at Erasmus MC Cancer Institute focusing on conventional dose rate VHEE radiotherapy. In addition, a collaboration with CERN will enable experimental VHEE measurements.

**Position requirements**

- Master's degree in physics or equivalent;
- Strong motivation and interest in research;
- Proficiency in scripting and programming (python, etc.);
- Solid skills in analysis, optimization, and problem solving;
- Nimble-mindedness, rigorous, proactive, independent, organization and time-management;
- Sense of collaboration, good communication skills, and ability to synthesize complex information; Adaptable to irregular schedules;
- Knowledge of radiation therapy and treatment planning (TPS) is an asset
- Working language: French or English
- Strong scientific writing skills in English

**Application deadline: 16 September 2025**

**More information**:
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If you are interested in a new challenge that offers competitive wage conditions (above EUR 3000.— net salary per month), do not hesitate to send us your application documents (with an application letter, CV, 2 referees, certificates and copies of degrees and grades) to the following link: https://recrutement.chuv.ch/vacancy/phd-student-in-medical-physics-309485.html