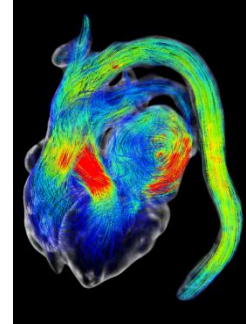


Available PhD position:  
5D flow MRI for non-invasive hemodynamic  
assessment in congenital heart disease

Duration: 4 years  
Location: Lausanne, Switzerland

**Background:** Advances in MRI, have contributed to improved decision-making and patient management in diseases that affect the heart. In particular, methods for three-dimensional time-resolved flow MRI (4D flow) offer a comprehensive and quantitative assessment of the cardiovascular system. Ongoing technological advances seek to improve the resolution, scan time, and ease-of-use of 4D flow which offers exciting opportunities for development and discovery in this Swiss National Science Foundation (SNSF) funded project.



**Project Description:** This work will combine cutting-edge physics and engineering research with an impactful clinical application. Upon familiarizing yourself with the technical and clinical aspects of the project, you will start to explore the development and optimization of 3D MRI sequences and image reconstruction algorithms tailored to quantifying blood flow. Initial development and simulation will be followed by optimization in phantoms and healthy adult volunteers, before scanning in patient cohorts. You will have the opportunity to translate your work through an already established collaboration with clinicians at the Lausanne University Hospital (CHUV) in Cardiology and Radiology. You will collaborate during the implication of advanced 3D flow MRI sequence in the interventional MRI environment which will allow the non-invasive hemodynamic evaluation of patients with congenital heart disease. The interventional MRI suite is a unique structure available at the Lausanne University Hospital offering exciting research possibilities. You will also have the opportunity to disseminate your work and collaborate with our extensive international network of research institutions.

**Location:** This project will take place in the Department of Radiology at CHUV and the University of Lausanne (UNIL) in Switzerland under the supervision of Dr. Tobias Rutz and Dr. Christopher Roy in collaboration with the research team of Prof. Matthias Stuber. You will be part of a group of over 20 engineers and physicists working within the hospital. Our group has access to 5 state-of-the-art MRI scanners, including a low-field system, and you will actively collaborate with Siemens Healthcare, and learn pulse-sequence programming.

**Qualifications:** We are looking for highly motivated candidates with a master's degree in engineering, physics, life science, or a similar degree. Strong communication skills and the ability to think creatively and critically within a team environment are required. Computer programming skills are desirable. Previous experience with MRI physics and image processing is an advantage.

**To Apply:** For further information or to apply (including a CV and motivation letter), please contact Dr. Christopher Roy ([christopher.roy@chuv.ch](mailto:christopher.roy@chuv.ch)) or PD Dr. Tobias Rutz ([tobias.rutz@chuv.ch](mailto:tobias.rutz@chuv.ch)).