PhD student - Early Stage Researcher (ESR) (f/m)

INSPIRE-MED (Integrating Magnetic Resonance Spectroscopy and Multimodal Imaging for Research and Education in MEDicine)

Dedicated MR spectroscopy data acquisition and parameter estimation methods including advanced modeling and machine learning

Location: University Bern, Bern, Switzerland

Gross salary (pre-employer/employee and income tax): 3700 €/month (~4100 CHF/mo)

Mobility allowance (pre-employer/employee and income tax): 600 €/month (670 CHF/mo)

Family allowance (pre-employer/employee and income tax): 500 €/month (if applicable)

Start date: between March and September 2019 (spring preferred)

Duration: 36 Months (extendable to 48 months to complete PhD under local financing)

**Project description:** This position is one of 15 ESR positions of the INSPIRE-MED European Training Network, which focuses on the development of Magnetic Resonance Spectroscopy (MRS) and MR Spectroscopic Imaging (MRSI) combined with Positron Emission Tomography (PET), enhanced by machine learning techniques. (for details, see [http://inspire-med.eu](http://inspire-med.eu))

**This particular ESR project** aims at developing novel MRS methods for intertwined acquisition and modeling of MR spectra to simultaneously determine metabolite concentrations, relaxation times and possibly other properties in a more efficient and accurate way than presently available. The project aims at use of methods equivalent to MR fingerprinting in MRI to record multi-dimensional MRS data and also at the use of machine learning (deep learning) methods for quantification. The project will involve programming of the MR scanner (C++) and of processing methods, but also recording of MR data in human subjects (Siemens whole body scanners at 3T and 7T).

**Research environment:** This project is hosted by the MR methods group at University Bern ([http://www.amsm.dkf.unibe.ch/](http://www.amsm.dkf.unibe.ch/)), the Inselspital Bern and the newly founded translational MR imaging center at sitem, the Swiss institute for translational and entrepreneurial medicine ([https://sitem-insel.ch/en/enabling-facilities](https://sitem-insel.ch/en/enabling-facilities)). MR applications mainly focus on brain diseases, but also include diseases
affecting the rest of the body. The PhD is performed within our graduate school with regulations to be found at [http://www.gcb.unibe.ch/](http://www.gcb.unibe.ch/).

The selected candidate will be able to take advantage of the unique set-up of the INSPiRE-MED network, encompassing 12 academic and 9 industrial partners providing the young researchers with transferable and generic skills as well as a comprehensive, wide-ranging education on the basic principles of medical imaging and image analysis. This multi-disciplinary environment encompasses physics, mathematical and computer sciences, with applications in medicine and biological sciences. Multiple visits and secondments at partner institutes are envisaged.

**Your profile:** You should have a master's degree in physics, computer science, or bio engineering, or a similar degree with an equivalent academic level. Candidates with good programming skills and/or prior experience with MR are preferred. A genuine interest in biomedical imaging and research should motivate your application. You should have strong social abilities allowing active participation in the European network, fruitful exchanges with other students and researchers, and an excellent integration in the team of our research group. You should be ready and able to travel in Europe for the network meetings, international conferences, as well as for profiting fully from secondments. A general interest in multidisciplinary work is a must.

**Eligibility and Mobility Rule:** Early-Stage Researchers shall, at the time of recruitment by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date. European citizenship or residency is not required.

**To apply:** Please send your CV, a motivation letter and contact details of references to:

Prof. Roland Kreis (roland.kreis@insel.ch)

University Bern, IMRM, Departments of Radiology and Biomedical Research, Erlachstr. 9A, CH-3012 Bern, Switzerland