LMU KLINIKUM

Promotionsstelle (Dr. rer. nat) MR Physik / Position for a Physics PhD student (Dr. rer. nat.) (m/f/d)

Klinik und Poliklinik für Radiologie

The Hospital of the University of Munich, Germany, is one of the largest and most competitive university hospitals in Germany and Europe. 48 specialized hospitals, departments and institutions harbouring excellent research and education provide patient care at the highest medical level with around 11.000 employees.

Workplace	Campus Großhadern	Date of entry	01.04.2025
Working hours	Part time	Application deadline	28.02.2025
Institution	Klinik und Poliklinik für Radiologie	Reference Number	2025-K-0016
Department	Klinik und Poliklinik für Radiologie – MRT-Physik		

Scope of duties

- The aim of this project in the field of interventional magnetic resonance imaging (MRI) is to develop and improve techniques for quantitative real-time MRI thermometry acquired during microwave ablation of liver tumors.
- In this project, interventional MRI protocols will be optimized for signal-to-noise ratio, extent of local artifacts around the interventional device, spatial image resolution, and temporal resolution. The presence of device-induced RF artifacts needs to be evaluated for different available microwave generators, microwave needles, and procedural setups. Several options of improved RF shielding and optimized (robust) MRI sequence parameters will be tested to minimize RF artifacts.
- Quick MRI acquisitions and evaluation procedures for quality assessment will be developed to verify that the data quality (signal-to-noise ratio, artifact level, spatial homogeneity, geometric distortion etc.) is consistent, and sufficiently good in all MR measurements over the time course of this project.
- The project is part of an international DFG-funded research collaboration between the University of Munich and the University of Bordeaux, France, about spatial mapping and analysis of real-time MRI thermometry data for highly efficient liver tumor ablation using inverse thermal modeling.

Our requirements

- You have an excellent M.Sc. or equivalent degree in physics or medical physics.
- Solid programming and data processing skills in python as well as previous experience in medical imaging or biophysics are highly desirable.
- Prior knowledge of MRI and of programming/implementation/optimization of MRI pulse sequences is beneficial.
- In order to carry out the project, you must be willing to familiarize yourself intensively with related topics, including the physics and technology of MRI (pulse sequence optimization and implementation), image data processing, as well as the fundamentals of bioheat transfer and thermal ablations.
- Capability of independent self-motivated work as well as very good English and communication skills are required.
- Application details: Applications should include a curriculum vitae, certificates and transcripts of academic degrees, a letter of motivation detailing the applicant's research interests, and contact information for 2 references. The position can be filled immediately.

Our offer

- The PhD position is under supervision of Prof. Dr. Dr. Olaf Dietrich, MRI Physics, Department of Radiology, LMU University Hospital, Munich, Germany.
- The MRI Physics group focuses on research and technical development in the field of interventional magnetic resonance imaging (MRI) and quantitative MRI. The group has extensive experience with interventional MRI including real-time needle guidance and thermal ablation procedures.
- We offer the candidate an interesting and challenging position in an interdisciplinary research group, embedded in a translational scientific environment and in close cooperation with the clinicians and medical scientists of the department of radiology and in a close international collaboration with the University of Bordeaux.
- The position includes the possibility of a research stay in Bordeaux, participation in international congresses, as well as a friendly, supportive, and inspiring working environment.
- The radiology department has several MRI systems with 1.5 or 3 Tesla as well as microwave ablation devices for thermal ablations under MRI guidance.
- A large amount of interventional MRI data and experimental MR thermometry data is already available providing a starting point for this research project.
- The position is funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG).
- The position is limited to three years.
- Remuneration is based on the Collective Agreement for the Public Sector of the Länder (TV-L) including all allowances customary in the public sector.

Offers and services of the employer

- Further education and training
- Company pension scheme
- Childcare services
- Mobile work (if suitable)
- Job ticket
- Discounts
- Staff accommodation (if available)

Herr Prof. Dr. Dr. Dietrich, Olaf

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Application format

Please use the Online-Form for your application

http://www.lmu-klinikum.de/39dd378c593b1187

Disabled persons will be preferentially considered in case of equal qualification. Presentation costs cannot be refunded.

Please note that we cannot reimburse travel expenses incurred through interviews.

We ask you for your understanding that postal applications will not be returned, but will be destroyed in accordance with data protection regulations. The data usage information also applies to postal applications