

## PhD position on MRI reconstruction with dynamic field monitoring

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Company: KU Leuven

Location: Leuven

Category: healthcare-practitioners-and-technical

We are looking for a highly motivated candidate with a Master's degree in a relevant discipline (engineering, physics, computer science, etc.). Students who will finish their Master's degree by July 2024 are encouraged to apply too. Prerequisites:

Candidates should be passionate about science and technology and the topic of this PhD, and show strong ambition to learn new techniques and gain hands-on experience with MRI.

Candidates should have a solid background in image processing or medical imaging, and hands-on experience with scientific programming.

In addition to excellent research skills and a critical mindset, candidates should have excellent communication skills to collaborate in a multi-disciplinary research team.

Excellent proficiency in English is required, as well as strong academic writing skills.

In addition, the following skills are highly valued:

Prior experience with MRI.

Programming experience in Python, Matlab, or C++.

Experience with mathematical modelling, inverse problems, and numerical optimization.

MRI is a flexible medical imaging modality that offers a wide range of structural and functional contrasts without harmful radiation. MRI uses a strong magnetic field and a sequence of radiofrequency pulses to generate a signal, which is subsequently reconstructed into a diagnostic image. However, instabilities in the magnetic field can distort the

reconstructed image. In this project, you will use a dynamic field camera (Skope NeuroCam) to measure field instabilities during the imaging sequence and correct for these in MRI reconstruction. We specifically aim to develop new methods for microstructure imaging that leverage dynamic field monitoring during spiral MRI sequences. The project will be done in close collaboration with clinicians and MRI physicists in the University Hospital. The Medical Imaging Research Center (MIRC) at the University of Leuven (KU Leuven, Belgium) is looking for a highly driven PhD student to develop computational methods for magnetic resonance imaging (MRI) reconstruction with dynamic field monitoring. The MIRC is a multidisciplinary research center located within the University Hospital Gasthuisberg that hosts over 100 scientists and clinicians with diverse backgrounds and expertise. The PhD candidate will be part of a young and vibrant research group within the Department of Electrical Engineering (ESAT) and the Department of Imaging & Pathology that focuses on quantitative MRI methods for microstructure imaging and their clinical translation.

A PhD scholarship for 4 years, with a competitive monthly stipend.

An exciting multidisciplinary research environment at KU Leuven, consistently ranked the top university in Belgium and the most innovative university in Europe (Reuters).

State-of-the-art imaging equipment, including a 3T research MRI system with a dynamic field camera (Skope NeuroCam) that will be instrumental to this project.

A broad spectrum of training, education, and career development activities organized by the university doctoral schools, and the possibility to participate in international conferences and collaborations.

Excellent quality of life in Leuven, a historic university town that offers a beautiful and safe environment, a vibrant intellectual atmosphere, and some of the world's best beer.

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