



## Doctoral Candidate 4 - Acquisition and joint reconstruction of dynamically weighted and undersampled MR-datasets

<b>Host Institution</b>	Bruker BioSpin, Germany
<b>PhD enrolment</b>	University of Antwerp, Belgium
<b>Primary Supervisor</b>	Dr. Sascha Koehler, Bruker BioSpin Preclinical Imaging Method development
<b>Subject area</b>	Preclinical MRI, MR sequence development, Data acquisition, Image reconstruction, Machine learning

### About this doctoral project and your tasks

You will develop an **MR-sequence offering full flexibility** regarding orientation, timing, (diffusion-) weighting strategies, and sampling trajectories. Thus, you will acquire a thorough understanding of MRI and its numerous contrast mechanisms.

Since MRI is inherently slow, efficient acquisition techniques like compressed sensing and parallel imaging became increasingly popular in the recent years. Requiring dedicated reconstruction techniques, implementing these methods will allow you to familiarize with **mathematical algorithms** like iterative linear solvers and machine-learning based reconstruction.

The **modular design of the reconstruction framework** will allow for an easy transition between image reconstruction and the generation of quantitative maps. In collaboration with the scientific partners of the consortium, you will learn about DL models enabling direct mapping of undersampled data to quantitative information of the brain.

### Foreseen secondments

For this project, we foresee secondments to:

- Prof. Aleksandra Pizurica (4 months) at **University of Ghent** (Belgium)
- Prof. Marleen Verhoye (3 months) at **University of Antwerp** (Belgium)

### About the host organisation

Bruker BioSpin PreClinical Imaging is a **leading manufacturer of MRI, PET, SPECT, micro-CT, and MPI systems for pre-clinical research**. Our products range from desktop systems to ultra-high field MR instruments using latest technologic advances.

We offer a position in an **innovation-orientated industrial environment** with strong links to academia. You will be part of our development team implementing novel MR sequences and reconstruction methods.



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IQ-BRAIN is an MSCA-Doctoral Network funded by the European Union, starting in December 2024 (GA No. 101169519).



## About the offer

- The selected candidate will be employed by Bruker Biospin for **36 months** on the MSCA-DN project.
- Doctoral candidates are offered a **competitive remuneration** based on the MSCA allowances and the regulations of the host institution. Bruker Biospin has received the following EU-grant to recruit a Doctoral Candidate (DC): monthly Living Allowance € 3.342; monthly Mobility Allowance € 600; and monthly Family Allowance € 660 (only if applicable). Please note that the final monthly, gross salary will result from deducting (from the mentioned amounts) all compulsory national labour taxes (social security, etc.) to be borne by the employer. Moreover, funding is available for technical and personal skills training and participation in international research events.
- **Expected start date:** between April and September 2025. We encourage last-year master students who will graduate by this time to already apply.

More information is available in the [general information document](#) for IQ-BRAIN positions.

## Specific profile and requirements

- Your profile aligns with the [general requirements and eligibility criteria](#) of the IQ-BRAIN project.
- You have a master's degree in **physics, computer science, mathematics, engineering, or related field** (or will have by the time of your appointment).
- Background in **scientific computing and/or magnetic resonance imaging (MRI)** is appreciated.

## More information

For additional information about the research project, contact:

**Dr. Sascha Koehler**

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or

**Dr. Michael Herbst**

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