

## Doctoral Candidate 10 - Develop a DL-based qMRI method for robust multi-compartment diffusion-relaxometry

<b>Host Institution</b>	Erasmus MC, The Netherlands
<b>PhD enrolment</b>	Erasmus MC, The Netherlands
<b>Primary Supervisor</b>	Dr. Dirk Poot, Dept. of Radiology and Nuclear Medicine
<b>Subject area</b>	MR Physics, data harmonization

### About this doctoral project and your tasks

Observing the movement of water with diffusion MRI provides great insights into tissue abnormalities. However, at the voxel ( $2\text{-}20\text{mm}^3$ ) level there often are multiple tissue types with different diffusion and relaxation properties. In this project you will investigate and advance **advanced multi-compartment diffusion-relaxometry acquisitions** that can disentangle these tissues. To achieve trust and clinical usability, the results of such acquisitions should be **stable in time and similar across scanners** with differences in hardware performances. By harmonizing the acquisition where possible and training deep learning based analysis methods to be invariant to the residual scanner differences diagnostic utility and trustworthiness of the results is maximized.

#### Your tasks will include :

- Sequence setting optimization
- Designing and implementing a DL architecture for robust multi-compartment diffusion-relaxometry acquisitions
- Write scientific papers
- Present at scientific conferences

### Foreseen secondments

For this project, we foresee secondments to:

- Prof. dr. Rita Nunes (3 months) at **Instituto Superior Técnico** (Portugal)
- Prof. dr. Jan Sijbers (3 months) at **University of Antwerp** (Belgium)
- Dr. Timo Schirmer (3 months) at **GE Healthcare** (Germany)