Imperial College London

PhD Studentship: Quantitative MRI for the Study of Brain Disease

Department of Medicine, Division of Brain Sciences

Payment of Home/EU Fees and a stipend of £18,000 per annum for 4 years

Commencing October 2019

Applications are invited for a 4-year PhD studentship in Quantitative MAuRI for the Study of Brain Disease to be carried out across both the Department of Brain Sciences (Hammersmith Campus) and Bioengineering (South Kensington Campus).

The project will aim to develop, optimise, and validate a neuro-imaging technique for quantitatively mapping the T2* (the observed MRI signal decay rate, which varies from tissue to tissue and with pathology). In particular, the project will focus on capturing and quantitatively mapping the T2* of tissues that would normally be "MR invisible" because of their extremely rapid signal decay. This quantitative information has a broad variety of applications, including in the study of neurodegenerative diseases. The technique will be developed and implemented on a 3 Tesla GE MR/PET system, and is expected to be a valuable adjunct to other neuro-imaging techniques and provide additional insight into the mechanisms of brain diseases such as neurodegenerative disease progression, brain cancer and brain developmental disorders.

The project will provide an exciting training opportunity for a student interested in learning about and advancing the state-of-the-art for neuroimaging.

The studentship is for four years and funded by the Biomedical Research Centre (BRC) and GE Healthcare. Full training will be given in relevant techniques. Supervisors will be Dr Neal Bangerter (Department of Bioengineering) and Professor Paul Matthews (Department of Brain Sciences). Dr Neal Bangerter is an expert in MRI pulse sequence development and optimisation, and a Reader in Magnetic Resonance Physics in the Department of Bioengineering at Imperial. He is a leader in the emerging field of ultra-short echo-time imaging, pulse sequence programming, and the extraction of quantitative data from MRI. Professor Paul Matthews is an expert on neuroscience and neuroimaging. He is the Director of the UK Dementia Research Institute at Imperial, and will provide input to the project with his expertise on neuroimaging and neurodegenerative disease research, as well as providing input on the design of validation experiments for the new techniques.

Ideally the applicant should have: 1) strong background in signal processing, 2) experience programming, and 3) background in physics/engineering. Some familiarity with magnetic resonance imaging and PET would be advantageous.

UK or EU residence and an undergraduate degree in a relevant area of engineering, physics, or computer science are requirements.

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Applicants must also meet Imperial College's English language requirements – further details can be found at   http://www3.imperial.ac.uk/registry/admissions/pgenglish.

Informal enquiries and full applications including an up-to-date curriculum vitae and the names and addresses of two academic references should be sent to n.bangerter@imperial.ac.uk

Closing date: August 18, 2019