# Postdoctoral Training fellow in diffusion-weighted MRI for MR-guided radiotherapy

**Closing Date** **11 April 2020**
**Location** **Sutton, Greater London, United Kingdom**
**Contract** **3 years, full time (35 hours per week), fixed-term contract**
**Salary range** **£32,200 - £39,350**

The Joint Department of Physics conducts and translates research and development of medical physics into clinical practice. The department is a collaboration of academic and clinical staff from The Institute of Cancer Research and The Royal Marsden NHS Foundation Trust. Within the department we initiate the next generation of radiotherapy treatments by combining the most recent developments in cancer biology, cancer therapeutics and medical physics in a truly interdisciplinary approach.

For a new research program "Adaptive Data-driven Radiation Oncology" funded by CRUK we are looking for three enthusiastic Post-Doctoral training fellows to start as soon as possible.

The strong trend towards the implementation of Stereotactic Body Radiotherapy (SBRT) and hypo-fractionated treatments for most common localized cancer types makes the control of geometrical uncertainties a central issue for the safe and successful practice of modern radiotherapy (RT). This geometrical accuracy becomes even more important for reliable targeting of smaller biological tumour sub-volumes in which substantially increased radiation boost doses are delivered.

Diffusion-weighted MRI already plays an important part in cancer diagnosis and therapy. With the rise of MR-guided radiotherapy a new field of applications emerges: Diffusion-weighted imaging as part of the daily workup on an MR-Linac could be used to assess and predict treatment response or identify resistant sub-volumes of the tumour, which require treatment intensification (dose-painting). Further applications are related to the assessment of radiation toxicity in risk organs in the vicinity of the treatment site.

To enable these applications, this project aims at implementing distortion-less diffusion-weighted MRI. While imaging for treatment planning on diagnostic MRI scanners would benefit from the techniques developed within this project, a particular focus will be the implementation of advanced diffusion-weighted MRI techniques on the Unity MR-Linac system. To meet the high requirements of radiotherapy in terms of spatial accuracy, in particular in the context of hypo-fractionated treatments, the successful applicant will have to combine MR pulse programming with state-of-the-art image reconstruction techniques, supported by dedicated high-performance hardware. A key aim of this project is the characterization of intravoxel incoherent motion (IVIM) with tailored diffusion-weighting gradients to characterize changes in microvasculature beyond the ADC.

The post holder will drive the work forward within a multi-disciplinary team of computer scientists, medical physicists and clinicians in the Joint Department of Physics at the Institute of Cancer Research and the Royal Marsden NHS Foundation Trust.

Applicants will hold a PhD in Physics, Engineering or another relevant field and ideally have experience in pulse sequence development and/or MR image reconstruction.

Please contact Professor Uwe Oelfke (uwe.oelfke@icr.ac.uk) or Dr. Andreas Wetscherek (a.wetscherek@icr.ac.uk), if you would like to discuss the job opportunity in more detail. To apply, please complete an application form, upload your CV and the supporting statement (addressing how you meet the person specification, what is your motivation to join the project and including the names and contact details of two referees) using the ICR's e-recruitment system, job reference 1021:

https://icr.tal.net/vx/mobile-0/appcentre-ext/brand-0/candidate/so/pm/1/pl/1/opp/1021-Postdoctoral-Training-fellow-in-diffusion-weighted-MRI-for-MR-guided-radiotherapy/en-GB