

# **INSTITUTE OF CANCER RESEARCH**

## **JOB DESCRIPTION**

<b>TITLE OF POST:</b>	<b>Postdoc for quantitative MRI for MR-guided radiotherapy</b>
<b>LOCATION:</b>	<b>Sutton (London)</b>
<b>HOURS PER WEEK:</b>	<b>35 (Fixed term 36 months)</b>
<b>SALARY BAND:</b>	<b>This is a fixed-term role, with starting salary based on experience with a minimum of £38,607 <sup>(*)</sup></b>

Quantitative MRI (qMRI) is of particular interest in MR-guided radiotherapy to detect functional changes associated with response to treatment and patient outcomes. Already 1.5% of linear accelerator systems installed world-wide are hybrid MR-Linacs. Daily functional imaging on MR-Linacs could assess damage to healthy tissue and identify resistant tumour sub-volumes to prescribe a treatment intensification (dose boost).

To enable these applications, this project aims at using various strategies to minimise uncertainty in qMRI acquisitions. Of particular importance are fast MR relaxometry techniques ( $T_1$ ,  $T_2$ ,  $T_2^*$ ) for spatially resolving changes induced by the patient's radiation treatment and their relation to different radiation dosages. To map dynamic processes during treatment delivery, we plan to use MRI techniques that allow for high temporal resolution, such as MR fingerprinting and derivatives of the Looping Star sequence. This work will involve MR pulse programming within the Philips PARADISE (C++) framework and image reconstruction using the ICR's high-performance computing architecture.

Techniques will be implemented on the 1.5 T MR-Linac system at the Royal Marsden Hospital and seamlessly integrated into the MR-guided radiotherapy treatment workflow. Additionally, we have four latest generation MRI scanners in the diagnostic radiology department on our Sutton campus.

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. Particular collaboration opportunities are with Prof. Uwe Oelfke's team on the Cancer Research UK programme "Adaptive Data-driven Radiation Oncology" and with Prof. James O'Connor's team on oxygen-enhanced MRI to detect hypoxia.

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 Dr Andreas Wetscherek ([a.wetscherek@icr.ac.uk](mailto:a.wetscherek@icr.ac.uk)), if you would like to discuss the job opportunity in more detail. To apply, please upload your CV and cover letter (addressing how you meet the person specification and including the names and contact details of two referees) using the ICR's e-recruitment system:**

**[www.icr.ac.uk/jobsearch](http://www.icr.ac.uk/jobsearch)**

(\*) as a minimum requirement candidates must have submitted their thesis by the start date of their employment and be awarded their PhD within the six month probationary period. Until the successful applicant passed their PhD exam, the starting salary would be £32,844 p.a.