The Washington University School of Medicine, Department of Radiation Oncology has an opening for a post-doctoral research associate in the Division of Medical Physics. The successful candidate should be interested in developing and applying quantitative MR neuroimaging techniques to guide radiation therapy planning, delivery, and assessment of brain tumors. Projects will include

- Developing brain network analysis techniques to quantify subject-specific radiation induced brain injuries and radiation dose response patterns across different brain regions, and to further carry out functional imaging guided advanced brain radiation therapy.

The successful candidate should possess a strong background in MR neuroimaging, or in image analysis and scientific programming. Individuals interested in pursuing an academic research career or a career in MRI integration in Radiation Oncology are encouraged to apply. Department of Radiation Oncology has a long history of productive research collaborations with the Mallinckrodt Institute of Radiology, the internationally well-established leader of medical imaging, within the Washington University in St Louis. Through the projects, the successful candidate will directly collaborate with and be mentored by several world renown experts of MRI neuroimaging within the WashU community. The research fellow will be supervised by Dr. Tong Zhu, in close collaborations with Dr. Jiayi Huang and Dr. Joshua Shimony.

Training opportunities in preparation for a medical physics residency are available in the department for qualified and interested candidates through a CAMPEP-accredited post-graduate certification program with partial tuition benefit.

Requirements:

- Ph.D. in engineering, physics, computer science, statistics, neuroscience or a related field.
- Strong background in neuroimaging analyses. Previous experience in advanced MR neuroimaging analysis of functional MRI and diffusion tensor MRI is desired.
- Strong programming skills in Matlab and Python or C/C++ along with familiarity with neuroimage analysis tools such as FSL and SPM. Previous experiences in connectomics, machine learning is a plus but not required.
- Ability of working in interdisciplinary teams with other technical scientists and clinicians.

The position is for a two-year period with the possibility of a third year based on the performance and the availability of funding. Interested candidates should send a cover letter describing research interests and previous experience, an up-to-date curriculum vitae and contact information of three referees to Dr. Tong Zhu at: zhut@wustl.edu.
Washington University School of Medicine is an equal opportunity, affirmative action employer.

Environment:
Department of Radiation Oncology has a long history of productive research collaborations with the Mallinckrodt Institute of Radiology. Mallinckrodt Institute of Radiology at the Washington University in St Louis is one of the field leaders for advanced neuroimaging, hosting the internationally renowned Neuroimaging Labs Research Centers. Several on-campus core MRI research facilities are dedicated for cutting-edge neuroimaging studies, including: (1) 4 Siemens Prisma 3T, (2) one Siemens Vida 3T, (3) one Siemens 3T PET-MR. A newly installed Siemens 0.55T low-field Free.Max system is also available for clinical research. Active research collaborations include advanced quantitative MRI technique for treatment response assessment, fast MRI imaging techniques for motion management, low field MRI for image guidance of radiation oncology.

Department of Radiation Oncology at the Washington University in St Louis has a well-established long tradition of being the field pioneer of technical innovation for advanced radiation therapy, including the first MR-linac system and the first Ethos system for adaptive therapy, the first single-gantry proton treatment system and the first radiation treatment of ventricular tachycardia. The department supports a state-of-the-art clinic located at Barnes-Jewish Hospital and Siteman Cancer Center, as well as several clinical affiliates. Clinical resources include numerous linear accelerators, very busy brachytherapy services with two HDR remote afterloaders, very busy MR-IGRT (including one ViewRay MR-linac and one 1.5T Philips MRI simulator with HIFU capability), Varian Ethos, a proton center, a GammaKnife, Varian Edge SRS/SBRT system, and a spectrum of imaging devices.

The medical physics division currently has over 40 ABR certified medical physicists, including over 30 faculty positions, supporting our clinical operations, research, and educational activities. The division has over 60 other members consisting of medical physics assistants, QA technicians, residents, post-doctoral fellows, graduate students, and staff. The clinic is supported by an active software development team. The institution is firmly committed to advancing the field of radiation therapy by actively pursuing novel clinical/research projects and investing in our faculty and in cutting-edge technology. Several development projects are underway including ongoing partnerships with industry to develop next-generation treatment processes and devices, and there are numerous other government, industry, and department funded research projects.

The department supports several education programs, including the longest-standing CAMPEP accredited medical physics residency, a CAMPEP-accredited post-graduate certification program, and a recently-formed Ph.D program in Medical Physics. Research infrastructure and funding are diverse and the research support resources are outstanding. The department offers highly productive collaboration opportunities with our clinical and cancer biology colleagues as well as university wide collaboration opportunities across various departments in the medical and other schools. There are currently several significant international projects and collaborations.