Postdoctoral position on In-Vivo Histology using 7T and Connectom MRI

A postdoc position for an MR physicist is available in the Department of Neurophysics (Director: N. Weiskopf) at the Max Planck Institute for Human Cognitive and Brain Sciences (MPI-CBS) in Leipzig, Germany.

The successful candidate will work on in-vivo histology of the human sensorimotor cortex through the development of ultra-high resolution MRI techniques. This constitutes a subproject of an international collaborative project on understanding the mechanisms of atrophy associated with spinal cord injury, funded by the BMBF as part of an ERA-NET Neuron network (hMRIofSCI; "Understanding the mechanisms of atrophy associated with spinal cord injury: the application of MRI-based in vivo histology and ex vivo histology").

The postdoc will be embedded in a unique world-leading research environment and make use of the latest cutting-edge MRI hardware including: 7T and the only 3T Connectom (300 mT/m maximum gradient amplitude) in Continental Europe for human MRI. The systems are complemented by tailored RF coils, ultra-fast optical prospective motion correction (Kineticor) and field camera devices (Skope).

The post holder will develop multi-parameter mapping techniques (for the 7T scanner) and diffusion MRI acquisition techniques (for the Connectom scanner) that maximize SNR, image quality and resolution in the sensorimotor cortex and the corticospinal tracts (through e.g. addressing eddy current artefacts, RF transmit field inhomogeneities, physiological artifacts, spiral imaging with field camera monitoring). In collaboration with the members of the Department of Neurophysics, these data will be fed into an innovative tailored biophysical model of the sensorimotor cortex that makes use of all the acquired contrasts, yielding biophysically relevant parameters such as estimates of myelin density and radial/tangential cortical fiber densities.

Applicants must have a PhD in physics, computer science, mathematics, biomedical engineering, or a comparable subject. If not already held, the PhD must be obtained by the agreed start-date. A strong background in MR physics plus high-level programming languages (e.g. C/C++, Matlab, Python) is essential. Applicants must be experts in pulse sequence programming and/or advanced MR image reconstruction (e.g. non-Cartesian parallel imaging, compressed sensing). They must also be specialists in one of the following areas: Siemens scanner operation and software, spiral imaging, advanced data analysis, computational neuroanatomy, biophysical modelling. SPM/FSL/Freesurfer, diffusion image processing toolboxes (e.g. MRtrix, FSL, ExploreDTI, DTI Studio), experience with prospective motion correction systems, or experience with field camera systems. The applicant should be able to demonstrate a consistently outstanding academic record, including publications.

The position is available now and the starting date is as soon as possible. It is funded for two years. Salary depends on experience and is based on regulations of the Max Planck Society.

To apply, please include all documents in one PDF-file in the following order: CV, contact information for three references, a brief letter describing your personal qualifications, research interests and motivation for applying, copies of up to two of your publications. Please submit your application via our online system at http://www.cbs.mpg.de/vacancies (the subject heading is “PD 14/17”) The deadline for application submission is 6 July 2017. Interviews of shortlisted candidates are planned between 19-21 July 2017.

Contact for informal enquiries regarding the post: Prof. Dr. Nikolaus Weiskopf (weiskopf@cbs.mpg.de). For more information: http://www.cbs.mpg.de/departments/neurophysics/

The Max Planck society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals.