

Postdoctoral Position in Methods Development for Ultra-High Field Functional and Structural Imaging of the Human Hippocampus (m/f/d)

Led by Prof. Klaus Scheffler, the Department of High Field Magnetic Resonance develops methodological and technical approaches that take advantage of the increased signal-to-noise ratio in ultra-high field MRI. Another focus is simulating functional signals to improve the understanding of the underlying components and limiting factors of various fMRI techniques.

Dr. Svenja Brodt leads the independent Max Planck research group, Brain States for Plasticity, at the Max Planck Institute (MPI) for Biological Cybernetics. The group focuses on investigating the relationship between multimodal association cortices. To achieve this, they combine novel behavioural paradigms with multivariate analyses of functional brain activity and microstructural tissue properties to assess online and offline memory representations.

Further information about our research can be found on our websites:

<https://www.kyb.tuebingen.mpg.de/high-field-magnetic-resonance>

<https://www.kyb.tuebingen.mpg.de/brain-states-for-plasticity-en>

Recent evidence for changes in functional activity during the rehearsal of new information, similar to those typically observed between recent and remote memories over much longer time periods, has raised the idea that rehearsal may accelerate systems consolidation. In order to investigate the roles of different hippocampal (HC) subunits during memory consolidation using ultra-high-field MRI we are currently looking for a

Postdoc (m/f/d) 100%.

The position (salary level TVöD-Bund E13) is part of a collaborative, third-party funded project between the Department of High Field Magnetic Resonance and the Brain States for Plasticity Research Group at the MPI for Biological Cybernetics in Tuebingen, Germany, and the Lyon Neuroscience Research Center in France. The appointment is initially for two years, with the possibility of extension.

Responsibilities

You will develop and optimize MR sequences for structural and functional hippocampus imaging at our 9.4 T whole body human MR scanner (Siemens console) and set up methods for ensuring data quality during the project. During this project you will work in close collaboration with a PhD student of the Brain States for Plasticity research group and the project PIs Dr. Svenja Brodt and Dr. Jonas Bause. The position includes

- Validating the performance of functional sequences and their associated artifacts.
- Optimizing anatomical MRI sequences for subfield segmentation of the human hippocampus.
- Improving signal homogeneity for structural and functional sequences using parallel transmit (pTX), as needed.
- Establish methods and imaging protocols for monitoring image quality.
- Evaluate fMRI pre-processing methods.
- Establish and rigorously test stimulation equipment.
- Support data collection.

Your profile

- Ph.D. in physics, neuroscience, biomedical engineering, or similar.
- Several years of experience performing MR scans independently.
- Strong expertise in optimizing sequences for ultra-high field (f)MRI, with a deep understanding of MRI signal formation and image reconstruction.
- Experience with MR sequence programming using the Siemens IDEA environment and/or PulseQ is highly beneficial.
- Very good programming skills in Python and/or MATLAB.
- Strong command of English. German is a plus.

Who we are

The High Field Magnetic Resonance Department is one of four established research groups at the MPI for biological Cybernetics. The department has a 3 Tesla Siemens Prisma-Fit and a 9.4 Tesla whole-body Magnetom Plus for human MRI, as well as a 14.1 Tesla Bruker small-bore animal scanner. The 9.4 Tesla scanner is equipped with 16 independent pTX channels and 32 receive channels. Numerous different coils optimized for specific research questions available thanks to our own RF lab. For image reconstruction a dedicated high-performance Gadgetron server as well as the institute's high-performance computing cluster can be used. The cluster is also available for signal simulations, fMRI preprocessing, pTX pulse optimization and other computationally intensive tasks.

The Max Planck Society seeks to employ more handicapped people and strongly encourages them to apply. Furthermore, we actively support the compatibility of work and family life. The Max Planck Society also seeks to increase the number of women in leadership positions and strongly encourages qualified women to apply. The Max Planck Society strives for gender equality and diversity.

Your application

The position is available from September 2025 on and will be open until filled. We look forward to receiving your application including (1) a cover letter, including a statement on roughly when you would like to start this position, (2) a motivation statement, (3) a CV, (4) name and contact of at least one people for reference. Please also include copies of your degree certificates and, if you like, you can also add transcripts from your past and current education listing the courses taken and their grades. You may also include your best publication.

Please send your application as a single pdf file by e-mail to jonas.bause@tuebingen.mpg.de

Please note that incomplete applications (1) – (4) will not be considered. If you have any questions regarding the position, feel free to contact us.