Opening for Post Doc MR Research Scientist, Bethesda, Maryland, USA

The primary goal of this project is to optimize and improve multi-channel RF transmit technology for high field human MRI at 11.7T (500MHz). A head-only system will be installed at NIH’s Bethesda campus in the summer of 2019 and will be equipped with Siemens electronics designed for 8-channel transmission and 64-channel reception. However, this is rather novel technology and at least for 11.7 T not standard product. Therefore, various optimizations and alterations of both hardware and software will be required to fully exploit potential benefits.

The researcher we envision to be working on this project will be involved with various aspects of the practical implementation of multi-channel RF transmit technology for brain imaging. Initially, this will focus on flexible and user-friendly control of the Siemens transmit and receive hardware. Next, the benefits of multichannel RF transmit technology for MRI of brain will be evaluated, including the development of optimized RF pulses for inversion, excitation, refocusing, and magnetization transfer experiments. This all will be done under the safety constraints of tissue heating, likely with the active monitoring of RF feedback signals. Additional, single- and multi-slice excitation pulses will be designed to perform gradient echo anatomical and functional imaging with optimized SNR and contrast uniformity.

NIH recently has developed an 8-channel RF transmit system based on on-coil amplification that it plans to adapt to 11.7T. Therefore, at a later stage, combination of the Siemens transmit technology with on-coil RF amplifier technology developed at NIH is envisioned and is expected to provide improved control of the RF fields to improve their uniformity in the brain.

Please contact:
Bernd Stoeckel (bernd.stoeckel@siemens-healthineers.com) and Jeff Duyn (jeff.duyn@nih.gov)

Online Application Link: https://jobs.siemens-info.com/jobs/239478?lang=en-us