The German Cancer Research Center is the largest biomedical research institution in Germany. With more than 3,000 employees, we operate an extensive scientific program in the field of cancer research.

The Division of Medical Physics in Radiology is seeking a PhD Candidate for Exploring MRI Radiofrequency Body Arrays at 14 Tesla (Ref-No. 2023-0174)

Job description:

There is an ongoing trend towards higher magnetic field strength in MRI. The first human MRI systems with 7 Tesla (T) are approved for clinical applications and the first 10.5 T system is operational for research examinations. In addition, systems with 11.7 and 14 T are in development.

Due to the short radiofrequency (RF) wavelength, multichannel RF transmit systems are required, where the homogeneity of the RF excitation can be increased to improve image quality and the specific absorption rate (SAR, tissue heating) can be reduced to enhance patient safety. This PhD position is aimed at exploring multichannel RF transmit antenna arrays for body applications at 14 Tesla.

The successful candidate will be tasked with conceiving and evaluating new antenna concepts for multichannel body arrays for MR systems above 7 T, in particular 14 T.

During the project, the successful candidate will learn to use electromagnetic simulation software (CST Microwave Studio) and get insight into modern multichannel RF transmit architecture. Promising element designs should be constructed and their behavior investigated experimentally.

Requirements:

Successful candidates will become members of a multidisciplinary international team and should:

- hold a graduate degree (Master’s / Diploma) in physics, engineering, or a related scientific or technical field,
- possess keen interest in scientific research and be able to work independently,
- have a strong background in electromagnetic theory; numerical methods and experience with numerical simulation tools (CST, Sim4life, COMSOL, or HFSS) are beneficial,
- be experienced in at least one programming language (preferably Matlab or Python)
- have good oral and written communication skills in English (German is advantageous, but not obligatory).

Experience in MR physics including RF coil design would be beneficial, but is not a prerequisite.

We offer:

- Interesting, versatile workplace
- International, attractive working environment
- Campus with modern state-of-the-art infrastructure
- Access to international research networks
- Doctoral student payment including social benefits
- Flexible working hours
- Comprehensive training and mentoring program through the Helmholtz International Graduate School

The position is limited to 3 years.

Important notice:
The DKFZ is subject to the regulations of the Infection Protection Act (IfSG). As a consequence, only persons who present proof of immunity against measles may work at the DKFZ.

For further information please contact Prof. Dr. Mark Ladd, phone +49 (0)6221/42-2550.

We ask for your understanding that we cannot return application documents that are sent to us by post (Deutsches Krebsforschungszentrum, Personalabteilung, Im Neuenheimer Feld 280, 69120 Heidelberg) and that we do not accept applications submitted via email. We apologize for any inconvenience this may cause.