

Invitation to the INM-4: Medical Imaging Physics

The INM-4 is happy to invite medical physics students of TU Dortmund to visit the institutes MRI, PET and MEG facilities.

Preliminary program:

9:30	Welcome to the INM
10:00	Introduction to MRI
10:30	Magnetoencephalography
11:00	Introduction to PET
11:30	Phase Imaging
11:30	Diffusion Imaging
12:00	<i>lunch break</i>
13:00	Molecular Imaging with MR/PET
13:30	Practical sessions in subgroups: <ol style="list-style-type: none">1. Measurements on a clinical scanner (4T)2. Field sensing devices3. Guided tour MEG/MRI/PET
18:00	<i>end</i>

Contact person:

Dr. Wieland A. Worthoff (w.worthoff@fz-juelich.de)

Forschungszentrum Jülich and the Institute of Neuroscience and Medicine - Medical Imaging Group

Forschungszentrum Jülich is one of the founding members of the Helmholtz Association and one of the largest research centres in Europe, employing a staff of 5,300. The campus houses nine research institutes with 53 sub-institutes working in the areas of energy and climate research, bio- and geosciences, medicine and neuroscience, complex systems, simulation science, and nanotechnology. In 2007, Forschungszentrum Jülich and RWTH Aachen University founded the Jülich Aachen Research Alliance (JARA) as part of the German Excellence Initiative, and the Institute of Neuroscience and Medicine (INM) is part of JARA-BRAIN (investigating psychological and neurological diseases). INM comprises approximately 380 scientific and technical staff and is divided into nine sub-institutes that conduct research into key technologies to “Decode the Human Brain” (Helmholtz Research Programme 2015-2019, 3rd funding period).

The activities of the Applicant’s Institute – Medical Imaging Physics, INM-4 (approx. 80 scientific and technical staff) – focus on the development, experimental validation and the clinical implementation of novel brain imaging methods (MRI, PET, fMRI, MR-PET, MEG). The INM-4 built a world-wide unique platform for translational neurological research based on combined ultra-high-field magnetic resonance imaging and positron emission tomography – TRANSFOR (BMBF, Siemens medical systems, Forschungszentrum Jülich), i.e., a human 9.4T MR-PET hybrid system. Furthermore, the Institute houses a 9.4T animal MR scanner, 3T and 4T MRI systems, a 3T MR-PET scanner, a human PET scanner, as well as an MEG system.

Concerning training and research, the Institute’s activities are embedded in national and international networks and collaborations. Jülich is also very highly regarded by international postdoctoral scientists with Humboldt scholarships (5th place for non-university research institutions) and Marie Skłodowska-Curie fellowship holders. INM-4 is a partner in the EU COST action TD 1007 – Bimodal PET-MRI Molecular Imaging Technologies and Applications for in vivo Monitoring of Disease and Biological Processes. The institute is involved in three Helmholtz Portfolio programs – Drug Research, Technology & Medicine, and Detector Technology and Systems Platforms. Prof. Shah is one of the three coordinators of the Helmholtz Alliance ICEMED – Imaging and Curing Environmental Metabolic Diseases. INM-4 is a leading partner in the EU-FP7-Cooperation TRIMAGE – an optimised trimodality (PET/MR/EEG) imaging tool for schizophrenia. In the framework of JARA, researchers from Aachen University Hospital will soon begin their experiments at our institute as part of the BMBF funded project APIC – Structural and Functional Changes to the Brain Induced by Antipsychotic Medication, and we are currently running a BMBF study together with the University of Düsseldorf entitled “cerebral network dysfunctions in patients with hepatic encephalopathy”. The Helmholtz Association is also a partner in the large-scale pan-European research infrastructure EuroBioImaging.