

Helmholtz Call for Chinese Applicants Interested in Running for CSC 2021 Fellowship

- Helmholtz Centre:** Forschungszentrum Jülich GmbH – www.fz-juelich.de
- Department/Institute:** Institute of Neuroscience and Medicine, Medical Imaging Physics (INM-4)
https://www.fz-juelich.de/inm/inm-4/EN/Home/home_node.html
- Supervising scientist:** Dr. J. Scheins
- University for registration or for a future degree:** RWTH Aachen University
- Research Field:** Positron Emission Tomography (PET), Neurorimaging, PET/MR hybrid scanners
- Position open for:** PhD Student
- Title of the research:** Analysis and Application of advanced PET Detector Information for High-Performance Image Reconstruction

More description of research topic:

The Institute of Neuroscience and Medicine (INM-4) is currently developing a second generation Positron Emission Tomography (PET) scanner as hybrid PET/MR system for advanced neuroscience research. The new scanner involves cutting-edge technology with a 3-layer detector block design, digital silicon photomultipliers (SiPMs) and a highly flexible data acquisition platform. In this context, the applicant is going to work in the field of iterative PET image reconstruction based on our in-house PET Reconstruction Software (PRESTO). As major goal, the provided elaborated detector information offer novel opportunities of deriving accurate point spread function (PSF) maps of the scanner from measurements. In a second step, the obtained PSF maps have to be efficiently integrated into the reconstruction process using PRESTO with subsequent performance validation.

The INM in Juelich provides a world-wide highly reputed research in neuroscience and a unique environment to support breakthrough discoveries. Among a 3Tesla Tim Trio MR/BrainPET system, it runs a Siemens 7T MR scanner, which is foreseen to host the new PET system.

The successful applicant will participate in interdisciplinary research related to the development, validation and application of the new strategies in fully-3D iterative PET Image Reconstruction for challenging new PET scanner hardware.

Specific requirements:

Required: excellent educational records in the related field, good programming skills (preferred C++) and data processing skills, solid knowledge of mathematics and statistics

Assets: experience with PET data acquisition and iterative image reconstruction, good knowledge of English language

Preferred applicant's background: physics, informatics, maths or related.

Duration of stay: 4 years

Working Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: January 2020

Language Requirement: Very good knowledge of English language, written and spoken. German language courses are organised in the context of our in-house training program and are free of charge.

Name and Address of the Supervisor: Dr. J. Scheins, Prof. Dr. N. J. Shah,
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