

Research focus of the department of “Physics of Molecular Imaging Systems” (**PMI**) is on exploring the physical limits of current and future molecular imaging technologies. These areas range from simulations of new detector concepts, hardware prototypes, high speed data processing, image reconstruction algorithms and applications using our research imaging prototypes. Our group consists of students and researchers from different disciplines: physics, engineering, computer science and medicine. PMI is part of a large international network with a close link to industry, especially Philips Research.

PhD and Postdoc Position for clinical PET-MRI system design

Hybrid simultaneous acquisition of Positron Emission Tomography (**PET**) and Magnetic Resonance Imaging (**MRI**) data has gained interest in clinical and preclinical research, due to their complementary information. PET allows imaging of metabolic processes down to the molecular level while MRI provides anatomical information with high soft tissue contrast and physiological parameters. Our group developed the world’s first preclinical MR compatible PET insert on basis of **fully digital Silicon Photomultipliers (dSiPM)** that enables simultaneous PET/MRI studies in a clinical MRI scanner.

Scope of the project is to improve the current integration scheme which affects the overall image quality of PET and MRI as a side effect of their integration. To **truly combine the PET detector with the RF coil to a hybrid PET/RF device**, our aim is to develop new technologies and topologies which allows for substantially improved integration of PET and the RF-system of the MRI while at the same time improving the overall PET performance. In this way, the performance of both – PET and MRI – can be equally to the performance achieved with individual devices.

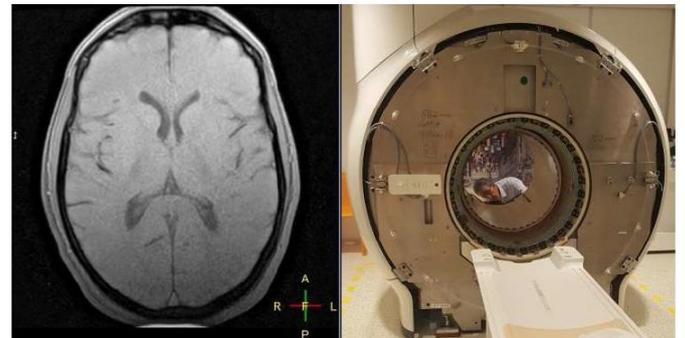


Figure: MRI images (left) that has been measured with a very high integrated and thus very thin PET detector (right).

New group members should be highly motivated and creative, show an exceptional track record, and have a strong background in electrical engineering, physics, or related fields, and be interested in working in an interdisciplinary environment at the interface of imaging physics and medicine. In particular, you should have an interest in electronic and firmware developments. You will work in a project team of 8 very experience scientist at PMI with close cooperation to leading industry (Philips and Bruker) and the Radiology and Nuclear Medicine departments of the University clinic RWTH Aachen towards a novel clinical PET/MRI device.

The positions are fully funded (100% employment). In order to apply, please submit a complete application, consisting of a cover letter, your CV, university transcripts, and the coordinates of at least two referees as a single PDF file via email to Prof. Dr.-Ing. Volkmar Schulz (schulz@pmi.rwth-aachen.de) with “[pmi-application]” in the subject line. The preferred starting date for these positions Q4-2017 – Q1-2018.