Post-Doctoral Fellowship in MRI-guided Interventional Applications

Cardiology Bioengineering Lab: clinicians, scientists and engineers that interact in an NIH- and industry-funded center. We use clinical & research MRI scanners to perform minimally invasive interventions in several fields (cardiac electrophysiology, cardio-pulmonary resuscitation, radiation oncology, interventional radiology). We build hardware and software for navigating devices to selected human-tissue targets, monitoring therapy delivery, and delivering real-time feedback to the performing clinicians, aiming to increase therapy success and reduce complications. Strong collaborations with imaging and medical-device manufacturers enable use of unlocked systems, allowing rapid prototype development followed by animal and human testing. Several applications are clinically used at Johns Hopkins and at other academic hospitals, with others at various stages of development and approval.

Expected Projects: Develop MRI-guided invasive therapeutic procedures

A. Develop systems for actively tracking the location of invasive medical devices (catheters, sheathes, needles) during navigation inside the body. Tracking occurs inside & outside the MRI scanner.
B. Develop MRI systems that employ invasive imaging probes with novel microelectronic assemblies for high-resolution monitoring of therapy delivery using invasive imaging coil arrays.
C. Develop MRI sequences for detecting diffuse fibrosis subsequent to radiation therapy of tumors, as well as following cardiac arrhythmia.

We are looking for people with strong analytical skills who are capable of developing cutting-edge therapeutic applications.

Mentoring is provided by applied physicists, invasive-cardiology and radiation-therapy JHU faculty.

Desired Qualifications:
1. PhD in Experimental or Applied Physics, Electrical Engineering, Physical Chemistry or related fields.
2. Proven competency with MRI pulse-sequence programming, preferably on Siemens platforms.
3. Experience in constructing analog intermediate frequency (50-150 MHz) circuits.
4. Basic understanding of heart and genitourinary anatomy.
5. Interest in clinical translation, including participation in animal & human interventions.

Appointment Length and Duration: 2-year post-doctoral fellowship with possible extension. The first year constitutes a trial period. Start date Summer 2019.

Application: Curriculum Vitae, 3 reference letters, and complete transcripts of undergraduate and graduate academic courses to: Dr. Ehud Schmidt eschmi17@jhu.edu.