Project #11: **Jing Fang** and **Xiaoping Hu**: *Continuous Arterial Spin Labeling with an Independent Labeling Coil for Kidney Perfusion Imaging*

Perfusion imaging is a clinical diagnostic tool and an important method for functional assessment. Perfusion MRI based on Arterial Spin Labeling (ASL) uses arterial blood as an endogenous label, allowing for noninvasive quantitative measurements of perfusion process. Because of its remarkable advantages in spatial and time resolution, ASL has been widely applied in both clinical diagnosis and research. Drs. Hu and Fang are both conducting research in the development and application of ASL perfusion imaging. During his work in further development, validation and application of perfusion MRI, Dr. Hu's group recently introduced a two-coil continuous arterial spin labeling (CASL) technology with an inexpensive and programmable setup for brain perfusion imaging, and he is interested in extending this approach for kidney perfusion imaging. Having a great deal of experience in sequence design for ASL imaging and RF coil and construction, Dr. Fang is interested in gaining more in-depth experience with advanced ASL techniques and, with abundant access to kidney patients, developing a multi-coil setup suitable for the kidney perfusion. The shared and complementary expertise and interests of Drs. Hu and Fang have led to the proposed collaboration of kidney perfusion imaging. The objectives and expected outcomes of this project are to 1) further the collaboration between the two groups in perfusion MR imaging in terms of both imaging sequence and RF hardware; 2) transport the technology developed on a Siemens platform in Dr. Hu's lab to the GE platform in Dr. Fang's lab; 3) further investigate the quantitative and sensitivity of the new CASL approach for kidney imaging; and 4) collect experimental data on Renal Artery Stenosis (RAS) with this novel setup of CASL for future grant application.