Statistics Department Seminar
Tuesday, February 20th, 2018 3:45 – 4:45 p.m.
Room 420, Olmsted Hall
Reception in Olmsted 1331 at 3:15

Multiple Approaches for Probing the Brain with MRI

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Abstract:
Owing to its noninvasive nature and contrast versatility, magnetic resonance imaging (MRI), has become a powerful and ubiquitously utilized approach for probing the brain. In addition to providing exquisite details of brain anatomy, MRI is now used to map the function, connectivity, and other important aspects, such as melanin and iron contents, of the brain. In this talk, I will first provide an overview of various MRI approaches for neuroimaging, including functional MRI (fMRI), diffusion weighted MRI, resting state fMRI, and iron sensitive imaging, and illustrate them with applications. Data analysis aspects of these methods will also be described. I will then highlight our work on the application of Granger causality analysis to fMRI data and on the characterization of brain dynamics with functional brain MRI, which allows to probe into the brain in added dimensions.

Biography:
Dr. Hu obtained his Ph.D. in medical physics from the University of Chicago in 1988. From 1990-2002, he was on the faculty of the University of Minnesota, where he became a full professor in 1998. From 2002-2016, he was Professor and Georgia Research Alliance Eminent Scholar in Imaging in the Wallace H. Coulter joint department of biomedical engineering at Georgia Tech and Emory University. In July 2016, Dr. Hu moved to UC Riverside to become professor and chair of bioengineering and director of center advanced neuroimaging. Dr. Hu has worked on the development and biomedical application of magnetic resonance imaging for 4 decades. As one of the early players, Dr. Hu has conducted extensive and pioneering work in functional MRI (fMRI). One of his recent interest is the development of MRI biomarkers for the diagnosis and early detection of Parkinson’s disease. Dr. Hu has authored or co-authored 275 peer-reviewed journal articles. His papers have been cited 20,000+ times (h-index: 77). Dr. Hu was a deputy editor of Magnetic Resonance in Medicine from 2005 to 2013 and an Associate Editor of IEEE Transactions on Medical Imaging from 1994 to 2004. He is currently an editor of Brain Connectivity since its inception, an associate editor of Magnetic Resonance in Medicine, and an editorial board member of IEEE Transactions on Biomedical Engineering. He is a fellow of the International Society for Magnetic Resonance, a fellow of IEEE and a fellow of American Institute of Medical and Biological Engineering in 2009.