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ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

S E M I N A R

Room M309 ANIN

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Research in High-Field and Parallel Imaging at the Magnetic Resonance Systems Lab

by

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Abstract: Many of the advances in medical imaging techniques come through the use of parallelism, with great contributions from electrical and computer engineers. This talk will discuss technology and applications of parallel MRI, discussing both parallel receive and transmit systems in MRI. Using parallel sensors for MRI enables accelerated imaging all the way to single shot imaging allowing imaging at 1000 frames per second and higher in some cases. Alternatively, it can enable improved signal-to-noise ratio and even image quality. Parallel transmit can be used for a variety of applications including compensating for image distortion due to magnetic field distortions caused by such subtle effects as air in the sinuses. After a brief overview of MRI imaging in general, we will discuss hardware approaches to parallel MRI, focusing on parallel transmit architectures and implementation. Some active research areas in our lab and other labs will be discussed, hopefully identifying potential areas of collaboration. These will include a "new" imaging method, parallel MRI at multiple frequencies.

Steven M. Wright received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana. He began his career as an Engineer/Scientist for magnetic resonance imaging at Saint Francis Medical Center in Peoria, IL, where he was also an Adjunct Assistant Professor of Electrical Engineering at the University of Illinois. He joined the faculty at Texas A&M University in 1988, where he established the Magnetic Resonance Systems Lab, which houses three superconducting MRI research scanners. Currently he is the Wisenbaker Professor of Electrical and Computer Engineering, Biomedical Engineering and Radiology. During the summer and fall of 2000, he was a Visiting Professor at the University of Texas M.D. Anderson Cancer Center, and currently has affiliate appointments at the Advanced Imaging Research Center at the University of Texas Southwestern Medical Center and the Center for Magnetic Resonance Research at the University of Illinois at Chicago. His research interests are in the development of instrumentation and techniques for magnetic resonance imaging and spectroscopy and in computational electromagnetics, particularly for RF coil array development for MRI. Dr. Wright is a Fellow of the IEEE, the International Society of Magnetic Resonance in Medicine, and the American Institute for Medical and Biological Engineering.