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**G Richard Baraniuk\*** ([richb@rice.edu](mailto:richb@rice.edu)), MS-380 Dept ECE, 6100 Main Street, Houston, TX 77005. *Recent Progress in Sparse Signal Recovery and Processing.*

Sensors, imaging systems, and communication networks are under increasing pressure to accommodate ever larger and higher-dimensional data sets; ever faster capture, sampling, and processing rates; ever lower power consumption; communication over ever more difficult channels; and radically new sensing modalities. The foundation of today's digital data acquisition systems is the Shannon/Nyquist sampling theorem, which asserts that to avoid losing information when digitizing a signal or image, one must sample at least two times faster than the signal's bandwidth, at the so-called Nyquist rate. Unfortunately, the physical limitations of current sensing systems combined with inherently high Nyquist rates impose a performance brick wall to a large class of important and emerging applications. This talk will overview some of the recent progress on compressive sensing, a new approach to data acquisition in which analog signals are digitized not via uniform sampling but via measurements using more general, even random, test functions. The implications of compressive sensing are promising for many applications and enable the design of new kinds sensors and signal processing systems. (Received September 21, 2010)