

**Department of Epidemiology and Biostatistics  
Biostatistics Seminar**

Wednesday, March 18, 2015  
12:00pm - 1:00pm -- WG73

**“Compressive Inference”**

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**Abstract:** Compressed or compressive sensing is a technology to reduce the size of data from the beginning– data collection stage. Through sampling much less data, it reduces imaging time and cost, making it very useful in applications arising in, for example, astronomy, medical imaging, and sensor networks, especially when dealing with massive data. In medical applications for instance, less imaging means less radiation. Compressive sensing reconstruction takes advantage of the signal’s compressibility or sparsity in some transformation domain to recover the underlying image of interest. This paper addresses how to make an inference about the support of the underlying signal directly from compressive sensing data. We develop a general and practical multiple comparison (MCP) inferential procedure, via the tube method, for compressive support detection. It is the first work that is able to make compressive inference about the underlying signal defined on continuous domain. Parameter selection is done by generalized cross validation and variance is also estimated. Comparison with Bonferroni based approach validates the advantages of the proposed method. This is a joint work with Grace Wang (Duke University) and Jiayang Sun (CWRU).