1108-65-126 **Mark Iwen** and **Aditya Viswanathan*** (aditya@math.msu.edu), Michigan State University, Department of Mathematics, 619 Red Cedar Road, East Lansing, MI 48824, and **Yang Wang**.

Fast Phase Retrieval for High-Dimensions.

Phase retrieval refers to the problem of recovering a signal from its magnitude or intensity measurements. This problem occurs in certain imaging modalities such as x-ray crystallography. In this talk, we develop a fast phase retrieval method based on block circulant measurement constructions which is near-linear time, making it computationally feasible for large dimensional signals. Theoretical and experimental results demonstrating the method's speed, accuracy and robustness will be presented. We then use this new phase retrieval method to construct the first known sublinear-time compressive phase retrieval algorithm capable of recovering a given s-sparse signal $x \in \mathbb{C}^d$ in just $\mathcal{O}(s \log^5 s \cdot \log d)$-time using only $\mathcal{O}(s \log^4 s \cdot \log d)$ magnitude measurements. (Received January 06, 2015)