

1125-42-214

Brian Preskitt, Aditya Viswanathan* (aditya@math.msu.edu), **Mark Iwen** and **Rayan Saab**. *Robust and Fast Phase Retrieval from Local Correlation Measurements*.

Certain imaging applications such as x-ray crystallography and ptychography require the recovery of a signal from phaseless (or magnitude-only) measurements - a problem commonly referred to as Phase Retrieval. This is a challenging problem since the phase encapsulates a significant amount of structure in the underlying signal. In this talk, we discuss a framework for solving the discrete phase retrieval problem using (in many cases, deterministic) local correlation measurements. We develop an essentially linear-time phase retrieval algorithm and present theoretical recovery guarantees as well as numerical results demonstrating its speed, accuracy and robustness. (Received August 12, 2016)