

## Title: ONE-BIT DIFFRACTION TOMOGRAPHY

### Abstract:

The compressive sensing (CS) framework is proposed to address the burden of analog-to-digit converters. One-bit CS is the extreme case where only the sign of the measurements are recorded.

A few years ago, we proposed null initializations as one initialization scheme for phase retrieval reconstruction. The null initialization can be regarded as one-bit measurements.

In this talk, we shall present a noise-robust framework for 1-bit diffraction tomography, a novel imaging approach that relies on intensity-only binary measurements obtained through coded apertures.

The proposed reconstruction scheme leverages random matrix theory and shifted inverse power iteration, to effectively recover 3D object structures under high-noise conditions.

Proper preconditioners are employed to improve the convergence speed of the tomographic phase retrieval.