

Joint APS/CNM WK #5: Advances in Phase Retrieval Methods for High-resolution X-ray Imaging

Time: Full-day

Date: Wednesday, April 22

Workshop location: Building 401, Room A1100

Organizers: Saugat Kandel (Northwestern), Sid Maddali (ANL), and Ming Du (Northwestern University)

Description: Phase retrieval is a numerical inversion method that enables lensless imaging of a physical scatterer from coherent diffraction data. Widely used in a variety of fields for x-ray, optical, and electron diffraction imaging experiments, it has played an important role in recent advances in high-resolution characterization of crystalline and non-crystalline materials. Phase-retrieval-based imaging methods are set to become even more prevalent once fourth-generation light sources, such as the APS-U and ESRF-EBS, come online. These sources will provide coherent flux orders of magnitude higher than what is currently available, enabling phase retrieval at energy and resolution regimes currently inaccessible. In this context, this workshop aims to cover recent advances and emerging computational ideas in phase retrieval and related methods that exploit beam coherence.

This workshop will provide a forum of discussion for recent advances as well as current and future challenges for phase retrieval applications in various coherent diffraction imaging subfields. We expect that this setting will allow researchers to identify shared challenges, and thereby develop collaborative approaches to further advance nanoscale coherent diffraction imaging methods.