



Contribution ID: 132

Type: Poster

Experimental Recovery of Sample And Coherence Information in Coherent Diffractive Imaging

Thursday, 20 November 2014 17:30 (1h 30m)

Coherent diffractive imaging (CDI) is a powerful method for recovering the transmission function of an object from its far-field diffraction pattern using iterative algorithms [1]. Recently, it has been shown that CDI works with partially coherent beam [2]. Methods have been developed for dealing with CDI data for which the coherence properties of the illumination are unknown [3]. In this work, we develop a method to simultaneously recover the object's phase and characterise the coherence properties of the illuminating wavefield without any a priori knowledge. The validity of our method is demonstrated using experimental diffraction data from the Soft X-ray Imaging beamline.

References

- [1] J. R. Fienup, "Phase retrieval algorithms: a comparison," *Appl. Opt.* 21(15), 2758–2769 (1982).
- [2] L. W. Whitehead, G. J. Williams, H. M. Quiney, D. J. Vine, R. A. Dilanian, S. Flewett, K. A. Nugent, A. G. Peele, E. Balaur, and I. McNulty, "Diffractive Imaging Using Partially Coherent X Rays", *Phys. Rev. Lett.* 103, 243902 (2009).
- [3] Pierre Thibault, Andreas Menzel, "Reconstructing state mixtures from diffraction measurements", *Nature*, Vol 494, 68-71, 07 February 2013.

Keywords or phrases (comma separated)

coherent diffractive imaging, Fresnel coherent diffractive imaging, partial coherence

Primary author: Mr TRAN, Giang (La Trobe University)

Co-authors: Prof. PEELE, Andrew (Australian Synchrotron); Dr TRAN, Chanh (La Trobe University); Dr VAN RIESSEN, Grant (La Trobe University)

Presenter: Mr TRAN, Giang (La Trobe University)

Session Classification: Welcome Function, Poster Session, Exhibition

Track Classification: Imaging