MaMaSELF

Contribution ID: **11**   Type: **not specified**

Continuous scans for X-Ray Ptychography

Wednesday, 22 May 2013 11:45 (30 minutes)

X-Ray Ptychography is a lensless imaging technique that produces high-resolution two- and three-dimensional quantitative maps through the
combination of multiple coherent diffraction measurements from the illumination of several overlapping regions on the specimen [1,2].
Recently, this technique has been show to be able to produce high-quality reconstructions even when sources of decoherence are introduced into the measurement system. These sources of decoherence can be of very different origin [3]:
1) mixed states in the probing radiation can include all sorts of mixing that manifest themselves as transverse partial coherence or finite longitudinal coherence
2) mixed states in the sample may result from quantum mixtures or stationary stochastic processes
3) detector point spread can be viewed as a mixed state in the detector plane
This project aims to drastically reduce scanning time by introducing scans with continuous movement and interpreting the movement of the object as a partial coherence effect.
Several parameters are explored, such as exposure time per area, overlap of the scanned regions and different scan patterns.

[1] Thibault, P., Dierolf, M., Menzel, A., Bunk, O., David, C., & Pfeiffer, F. (2008).
High-resolution scanning x-ray diffraction microscopy. Science (New York, N.Y.), 321(5887), 379⬚82. doi:10.1126/science.1158573
[2]Dierolf, M., Menzel, A., Thibault, P., Schneider, P., Kewish, C. M., Wepf, R., Bunk, O., et al. (2010).
Ptychographic X-ray computed tomography at the nanoscale. Nature, 467(7314), 436⬚9. doi:10.1038/nature09419
[3] Pierre Thibault, Andreas Menzel. Reconstructing state mixtures from diffraction measurements Nature, Vol. 494, No. 7435. (06 February 2013), pp. 68-71, doi:10.1038/nature11806

Primary author: Mr BRAUN, Philipp (Paul Scherrer Institut)

Presenter: Mr BRAUN, Philipp (Paul Scherrer Institut)

Session Classification: Late Morning Session Wednesday