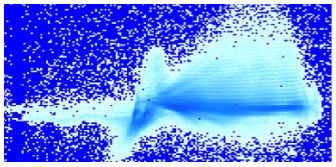

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# Sub-hour 3D ptychography at I13-1: Coherence, Diamond Light Source

*Tuesday, 18 June 2024 11:55 (15 minutes)*

X-ray ptychographic tomography is now routinely used at synchrotron facilities around the world, producing nanoscale resolutions in 3D. However, the acquisition times still lag significantly behind other imaging methods. As many synchrotrons upgrade to diffraction limited rings, the community is being presented with a dramatic increase in the coherent flux available. However, translating that increase in flux into increased scientific throughput remains a challenge.

The latest advances in high-speed ptychography at I13-1: Coherence of the Diamond Light Source have combined a novel acquisition scheme with the latest detector technologies to achieve a ptychography collection rate of over 100 kHz. This is providing sub-second projections and sub-hour 3D ptychographic tomography. We present the latest technical developments as well as their applications in the fields of battery materials and brain imaging.

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