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Sub-Hour 3D Fly-Scanning Ptychography at I13-1 Beamline of Diamond Light Source

Tuesday 27 August 2024 18:00 (15 minutes)

X-ray ptychography is one of the most used nanoscale imaging techniques at synchrotron facilities around the world. The upgrade of many synchrotrons to diffraction limited rings increases dramatically the coherent flux available up to two orders of magnitude. To use at the best the x-ray beam enhancement, the ptychography community is focusing on increasing the acquisition speed of the technique development various methods: from multibeam to fly scanning[1,2,3,4,5,6,7].
Here we present the latest advances in fast ptychography at the I13-1 beamline of Diamond Light Source. We describe a detector-limited fly-scanning approach[8] where the maximum ptychographic acquisition rate is defined by the maximum detector rate. We combine this fly-scanning method with the SELUN prototype detector from DECTRIS, which is capable of 120kHz in continuum mode, to perform 100 kHz ptychographic acquisition.
We show recent experimental results, including sub-hour 3D ptychography. We discuss the current limitations, future developments, and potential applications.

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I plan to submit also conference proceedings

Yes

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