

Improving hardware triggered data collections with the PandaBox and Bluesky/ophyd-async.

In recent years, beamlines at Diamond Light Source have started replacing old hardware with the newer PandaBox control system and developing new data acquisition software using the Bluesky data collection framework.

This poster presents two examples of implementing a Bluesky-based system to control the PandaBox, with the aim of improving the speed of data acquisition.

On the I22 SAXS/WAXS beamline, a new bluesky-based approach has been developed to replace aging and deprecated FPGA-based acquisition and control system TFG2 with the Panda. This set up makes it possible to trigger any of the 8 detectors in use at any time on the beamline, as well as to keep the detectors in sync with each other, enabling triggering within a 1ns resolution. Additionally, the asynchronous nature of ophyd-async devices allows for reduced time in between collections, as multiple smaller tasks can be run concurrently.

The small molecule single-crystal diffraction beamline, I19, has been running serial crystallography, a high throughput technique that can be used to determine the molecular structure of crystals while minimizing radiation damage, scans for the past couple of years employing a ZebraBox. They are now looking to increase the efficiency of this technique by migrating the code to a bluesky application to be able to externally trigger their Eiger detector via the newer Panda. This will allow them to run successive forward and backward rotations at each position of the scan, improving the speed of collection and the completeness of the data collected.

Author: FRISINA, Noemi (Diamond Light Source)

Co-author: DIXEY, Richard (Diamond Light Source)

Presenter: FRISINA, Noemi (Diamond Light Source)

Session Classification: Poster Session / Coffee Break