Contribution ID: **2579** Contribution code: **THPA128** Type: **Poster Presentation**

An online analysis platform for improving X-ray light source operations

Thursday, 11 May 2023 16:30 (2 hours)

The design, execution, and analysis of light source experiments requires the use of sophisticated simulation, controls and data management tools. Existing workflows require significant specialization to accommodate specific beamline operations and data pre-processing steps necessary for more intensive analysis. Recent efforts to address these needs at the National Synchrotron Light Source II (NSLS-II) have resulted in the creation of the Bluesky data collection framework, an open-source library for coordinating experimental control and data collection. Bluesky provides high level abstraction of experimental procedures, instrument readouts, and data analyses to encapsulate data collection workflows. We present a prototype data analysis platform for integrating data collection with real time analysis at the beamline. Our application leverages Bluesky to provide data selection, in combination with a flexible run engine to execute user configurable Python-based analyses with customizable queueing and resource management. We discuss initial demonstrations to support X-ray photon correlation spectroscopy experiments and future efforts to expand the platform's features.

Funding Agency

This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Advanced Scientific Computing Research under Award Number DE-SC00215553.

Footnotes

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Yes

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Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T33: Online Modelling and Software Tools