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An online analysis platform to facilitate analysis at X-ray light source

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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 and instrument readouts to encapsulate generic workflows. We present a prototype analysis platform for coordinating data collection with real time analysis at the beamline. Our application leverages a flexible run engine to execute user configurable Python-based analyses with customizable queuing and resource management. We discuss initial demonstrations to support X-ray photon correlation spectroscopy experiments and future efforts to expand the platform's features for adaptive and machine-learning informed workflows.

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