Abstract Submitted for the MAR17 Meeting of The American Physical Society

Xi-cam: Flexible High Throughput Data Processing for GISAXS RONALD PANDOLFI, DINESH KUMAR, SINGANALLUR VENKATAKRISH-NAN, ABINAV SARJE, HARI KRISHNAN, Lawrence Berkeley National Laboratory, LENSON PELLOUCHOUD, FANG REN, AMANDA FOURNIER, Stanford Synchrotron Radiation Lightsource, ZHANG JIANG, Advanced Photon Source, CHRISTOPHER TASSONE, APURVA MEHTA, Stanford Synchrotron Radiation Lightsource, JAMES SETHIAN, ALEXANDER HEXEMER, Lawrence Berkeley National Laboratory — With increasing capabilities and data demand for GISAXS beamlines, supporting software is under development to handle larger data rates, volumes, and processing needs. We aim to provide a flexible and extensible approach to GISAXS data treatment as a solution to these rising needs. Xi-cam is the CAMERA platform for data management, analysis, and visualization. The core of Xi-cam is an extensible plugin-based GUI platform which provides users an interactive interface to processing algorithms. Plugins are available for SAXS/GISAXS data and data series visualization, as well as forward modeling and simulation through HipGISAXS. With Xi-cams advanced mode, data processing steps are designed as a graph-based workflow, which can be executed locally or remotely. Remote execution utilizes HPC or de-localized resources, allowing for effective reduction of high-throughput data. Xi-cam is open-source and cross-platform. The processing algorithms in Xicam include parallel cpu and gpu processing optimizations, also taking advantage of external processing packages such as pyFAI. Xi-cam is available for download online.

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Date submitted: 14 Nov 2016

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