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Challenges and Perspectives of AreaDetector for Sirius High-throughput Detectors

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The PiMega detector family deployed at Sirius uses CERN's Medipix3RX ASIC, delivering nearly 210 Gbps worth of raw payload in the largest detectors. In new generations based on Timepix4, the worst case bandwidth considered can reach up to 1.8 Tbps.

Current software architecture has a strong decoupling between data acquisition software stack and the EPICS IOC, relegating to EPICS the role of slow viewer only at 10 Hz update rate. A great deal of AreaDetector functions such as buffering, file writing, ROIs, image viewers, flat field array processing, are reimplemented elsewhere.

We discuss possibilities of higher integration to AreaDetector framework in newer software designs and present the challenges considered in this effort, future perspectives for new high-throughput detectors and questions that arise about possible hardware acceleration implementations in the framework, focusing on making the best use out of the existing and open source frameworks such as the AreaDetector.

Please select if talk will be in person or on zoom

On Zoom

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