

SSRL Eiger Detector Status

HDRMX Meeting at MAX IV, Lund

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Current Status

- Took delivery of an EigerX 16M just before Christmas
 - Some minor hardware issues
 - Resolved during the initial installation
- Since February the detector sees beam on BL11-1
 - Very weak intensity, no users
 - Time for testing
 - Work on control software integration
- Detector is targeted for BL12-1
 - Commissioning next user run, starting Nov 2017
 - Micro focus, wider band pass than 12-2
 - Available serial crystallography setup with sample injector

Detector Control

- Integration into DCS/Bluice
 - Relatively straight forward so far
 - API well documented, with occasional surprises
 - FileWriter interface is operational
 - Likely to be used for “normal” data collection
 - Zmq and Monitor interfaces are under development
 - Used for screening, indexing, rastering
 - Injector experiments - perhaps

Data quality

- Test data using myoglobin, 0.979 Å, 40-1.4Å, ~1% Anom
 - 90 deg at 1 / 0.1 / 0.01 deg oscillation
 - Rmerge: ~0.028, Rmerge high: 0.19 / 0.12 / 0.11
 - $\langle I/\sigma(I) \rangle$: ~25, $\langle I/\sigma(I) \rangle$ high: 2.5 / 3.7 / 4.2
 - Fe Anom Peak: 21.9 / 27.9 / 30.6
 - All phased automatically

Data processing

- The processing pipeline is being worked on
 - Integration and forward is in place
 - Indexing depending on streaming interface to be completed in the control software
- CPU scaling of XDS using H5ToXds, 900 images
 - Dual Xeon E5-2670 v3, total cores 24/48
 - JOBS=1 and JOBS=4 sweet spot for both at CPUS=12
 - JOBS=4 is only 10% faster
- XDS read plugin looks promising

Toward higher data rate

- Currently using the general BL computing setup
 - Fine for testing, but not for high data rate
- Dedicated storage and compute nodes for BL12-1
 - Small 25TB all SSD storage array
 - Initially, 2 processing nodes, will add more as needed
 - Dual Xeon E5-2650 v4, 256GB RAM
 - 56GB/s InfiniBand interconnects
 - BeeGFS file system
 - Beamline control node is part of the IB cluster
 - Purchased, waiting for delivery