SSRL Eiger Detector Status

HDRMX Meeting at MAX IV, Lund

Thomas Eriksson, March 15\textsuperscript{th}, 2017
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 straightforward 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
  • $R_{merge}$: ~0.028, $R_{merge}$ high: 0.19 / 0.12 / 0.11
  • $<I/\sigma(I)>$: ~25, $<I/\sigma(I)>$ 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
Macromolecular Crystallography at SSRL

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