

ESS ACTIONS on previous STAP report

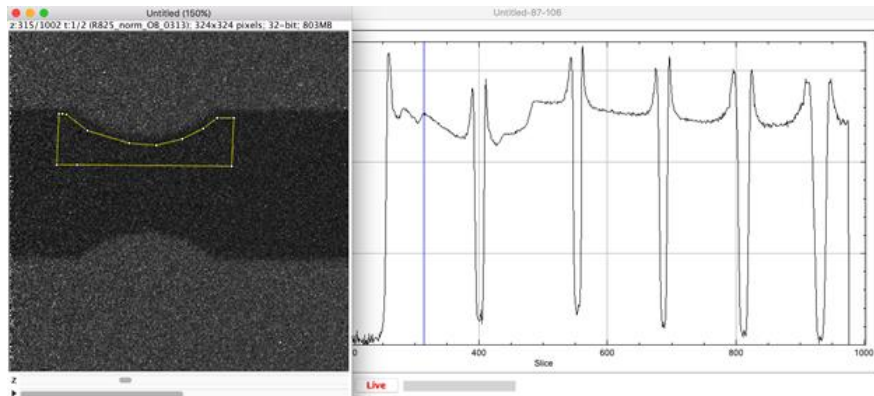
| | Action Item | | Comment/Response taken | Details (from report) |
|---|---|------------|---|---|
| 1 | <input type="checkbox"/> Contract HZG-ESS not signed | ESS + BEER | <ul style="list-style-type: none"> ➤ Progress finally made (one open issue only) ➤ Schedule discussions took place | The HZG team reported that a contract between ESS and HZG is still not signed. HZG has advanced the funds for the BEER project in the past two years, but may end this soon, essentially halting the BEER project. This situation needs urgent resolution by the ESS and HZG management. |
| 2 | <input checked="" type="checkbox"/> electrical power distributions | ESS | @Stuart Birch now in place and in charge of electrical engineering | The design of the distributions systems for electric power and other utilities is ongoing, however, the instrument teams have uncertainties about applicable requirements. |
| 3 | <input checked="" type="checkbox"/> information flow on technical solutions | ESS | newsletters implemented and distributed | While more frequent meetings are not desired, it begs the question to the STAP whether ESS could facilitate information flow otherwise, e.g. by mailing lists where questions such as "What prices do other teams get in quotes for shielding material?" or "Does anyone have insight on question X related to the PSS system?" could be posted or announcements to all members of the instrument teams can be made in an informal way. |
| 4 | <input checked="" type="checkbox"/> access to experimental areas for first responders. To clarify @Erik Nilsson @Andrew Jackson | ESS | will surely be clarified at ESS level. First responders anyway have access also now. | The instrument teams reported that first responders such as firemen and potentially paramedics will not have access to experimental areas due to lack of training. This requires a solution from ESS and should be communicated to the instrument teams. |
| 5 | <input checked="" type="checkbox"/> gamma monitors @Günter Muhrer @Sigrid Kozielski | ESS | This has been discussed with the RP group and the area monitors that will be placed at each instrument are intended to monitor the ambient dose rate with respect to a supervised zone. "Hot Spots" will be dealt with by regular radiological surveys and mitigation measures as per our radiation protection procedures. Temporary hot spots can be treated with temporary zoning or shielding. Hot spots that are re-occurring due to design or manufacturing errors will need to be eliminated through modification of the shielding. | The instrument teams reported that gamma-monitors in the experimental areas will be installed in locations that are independent of the shielding locations. It appears to the STAP that hereby an opportunity is missed since the calculations provide the most likely hot spots indicating abnormal conditions and therefore unnecessary exposure of personnel and users. The STAP suggest to ESS to consider the outcome of shielding calculations to inform the locations for gamma-monitors. |
| 6 | <input checked="" type="checkbox"/> BEER detector readout @Gregor Nowak @Tobias Richter @Maria Romedahl @Steven Alcock | ESS | Extended exchange and discussion between ESS detector group and HZG on the integration of the data-protocol in hard and software. Solution in terms of ideas fixed by using the ESS preferred software for the FPGA (Ultrascale ZYNQ) and identified interfaces for this FPGA to the HZG read-out. Additional interfaces in hard and Software are already implemented on the current version of the HZG read-out board and its FPGA. But they will not be used for the current demo-detector-project since for this development they are not needed and this is out of scope for this project. In summary: Preparations made in order to move forward once TA signed. | The BEER detector team requires the format of ESS facility time stamps from the ICS team to continue development of soft- and hardware for the BEER detector development. |
| 7 | <input type="checkbox"/> data reduction and analysis for ODIN and BEER @Thomas Holm Rod | ESS + DMSC | <ul style="list-style-type: none"> ➤ Progress for WFM data reduction using data from V20 (reflectometry, diffraction, imaging) ➤ TOF imaging data analysis addressed by PSI-IKC ➤ BEER specific data reduction and analysis pending ➤ 'Imaging+Engineering Data scientist' position advertised (PLEASE DISTRIBUTE!): https://europeanspallationsource.se/careers/vacancies | <p>The distinguishing feature of the ODIN beamline are the wavelength dependent imaging modes. For material characterization, in particular pixel-by-pixel Bragg edge analysis is in the opinion of the STAP absolutely crucial for the success of ODIN as ODIN. Similarly, the data reduction for the BEER beamline has never been tried.</p> <p>The STAP therefore wishes to emphasize to ESS that support for software development for ODIN as well as BEER should receive as much support as possible. While data reduction for BEER affects all diffraction beam lines, ODIN can only fulfill its promise if suitable Bragg-edge analysis tools are developed.</p> <p>Action Item: ESS need to ensure that data reduction and data analysis receives required resources (DMSC) to process data on day 1.</p> |

ESS ACTIONS on previous STAP report: Data reduction

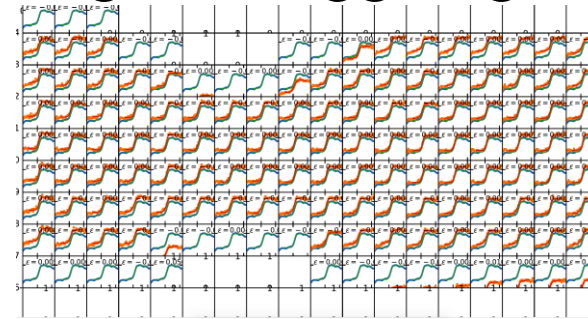


Ongoing work on **WFM imaging data** (using GP2 prototype detector)

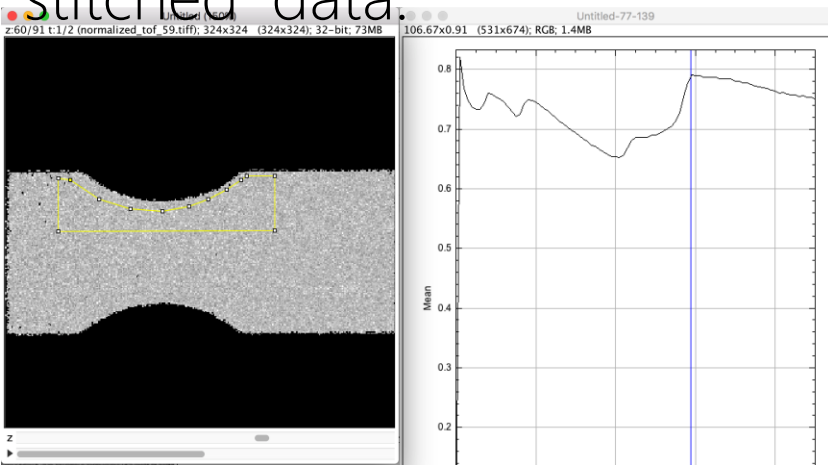
Raw data:



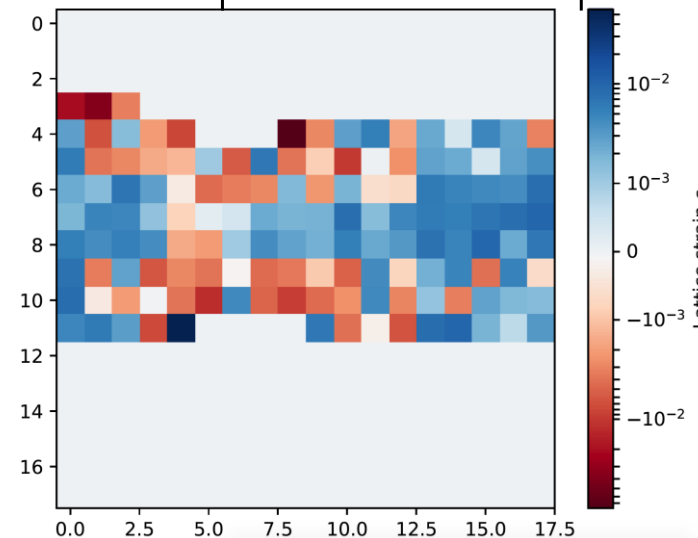
'fitting' of Bragg edges (parallel to PSI IK WP)



'stitched' data:



Example strain map

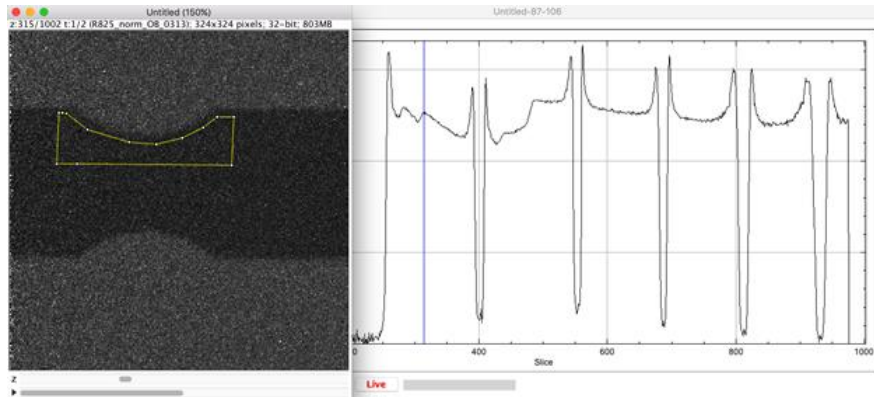


ESS ACTIONS on previous STAP report: Data reduction

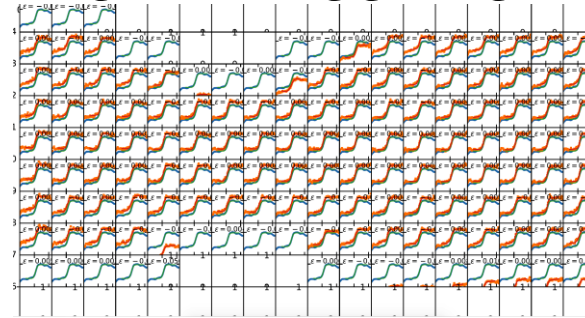


Ongoing work on **WFM diffraction data** (using GP2 prototype detector)

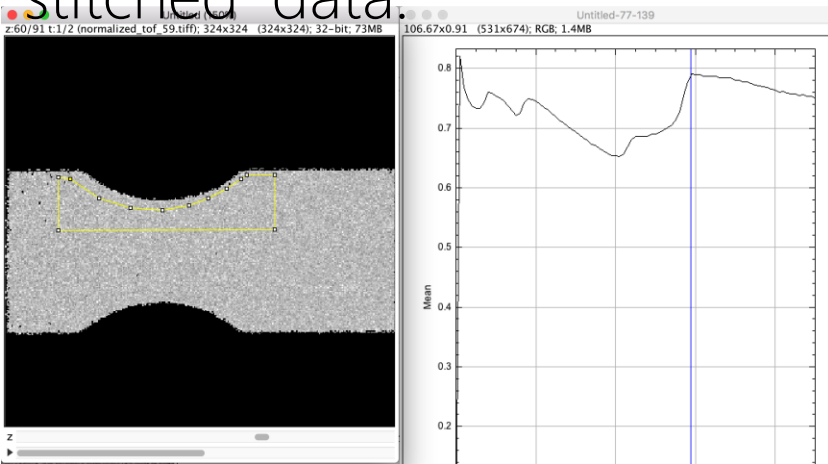
Raw data:



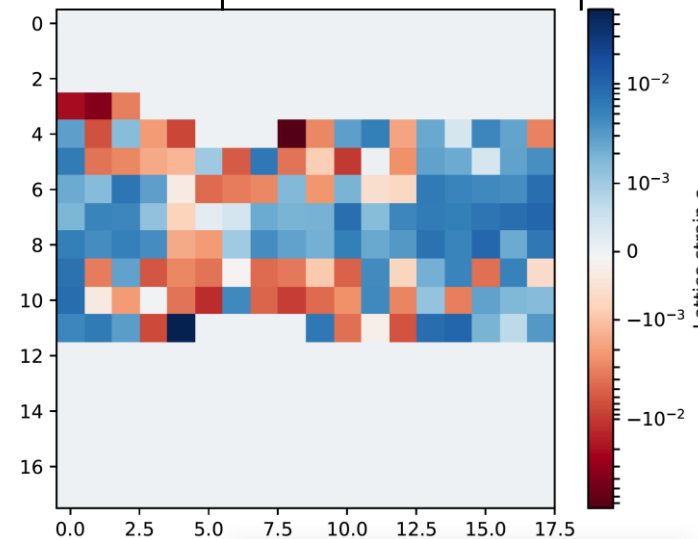
'fitting' of Bragg edges (parallel to PSI IK WP)



'stitched' data:



Example strain map



ESS ACTIONS on previous STAP report: Data reduction



Ongoing work on WFM reflectometry data

paper draft ready to be submitted

Wavelength Frame Multiplication for Reflectometry at Long Pulse Neutron Sources

Oliver Löhmann^{a,b}, Luca Silvi^c, Peter M. Kadletz^b, Neil Vaytant^b, Owen Arnold^d, Matthew D. Jones^d, Jonas Nilsson^b, Regine von Klitzing^a, Thomas Arnold^b, Robin Woracek^b

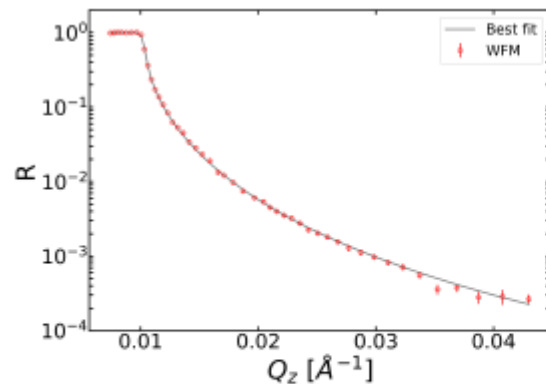


Figure 6: Combined data (red circles) and the best fits for a bare silicon block measured with ESS pulse in WFM mode.

Full DAQ chain demonstrated

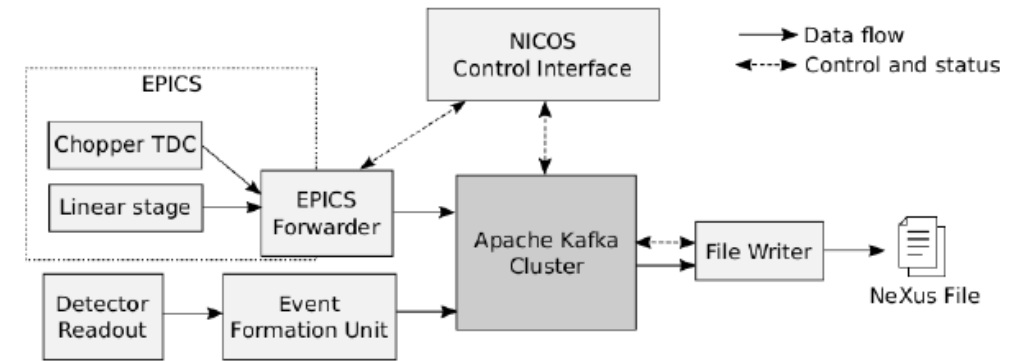


Figure 2: Overview of the data pipeline at the test beamline.

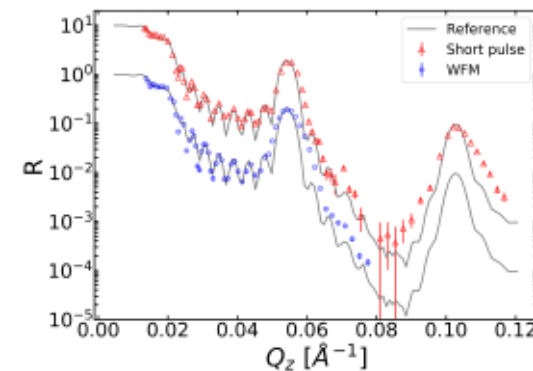


Figure 7: Combined data and reference data (black lines), respectively, for the super mirror measured with single pulse (SP, red triangles) and ESS pulse in wavelength frame multiplication mode (WFM, blue circles). SP data are shifted for better visibility.

ESS ACTIONS on previous STAP report: Data reduction



Ongoing work on WFM diffraction data

- Detailed McStas comparison being performed
- Now also on 2D detector (last STAP only 3He tubes considered)

Displacement of DENEX detector

Global agreement on frame limits and Bragg peaks positions

