



DREAM and BEER

Data processing pipeline

Updates DMSC STAP Spring 2026

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IDS for DREAM and BEER

2026-04-22

Agenda



1 DREAM

2 BEER

3 Common tools for Diffraction

4 Status and Planning

DREAM

Updates since Oct 2025



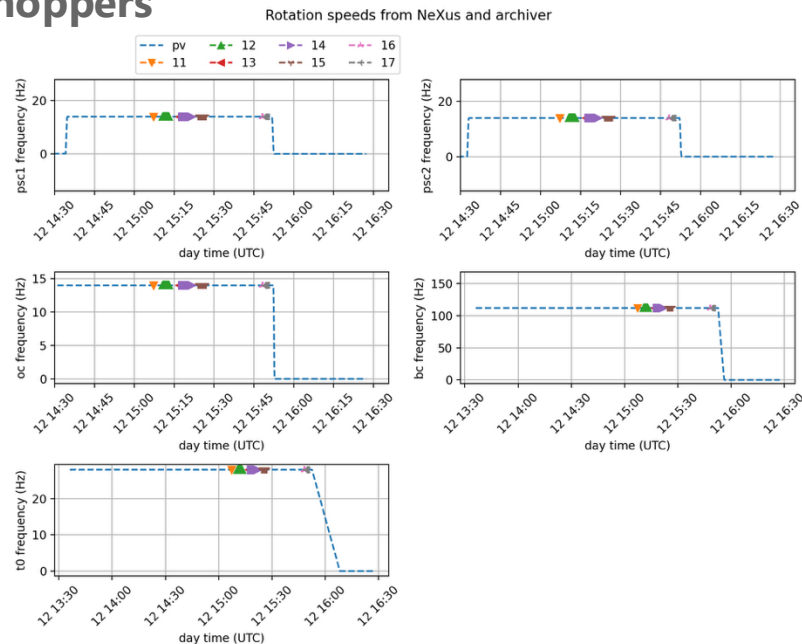
Instrument

- Dec 2025-Feb 2026: Integrated tests for choppers, slits, monitors, detectors

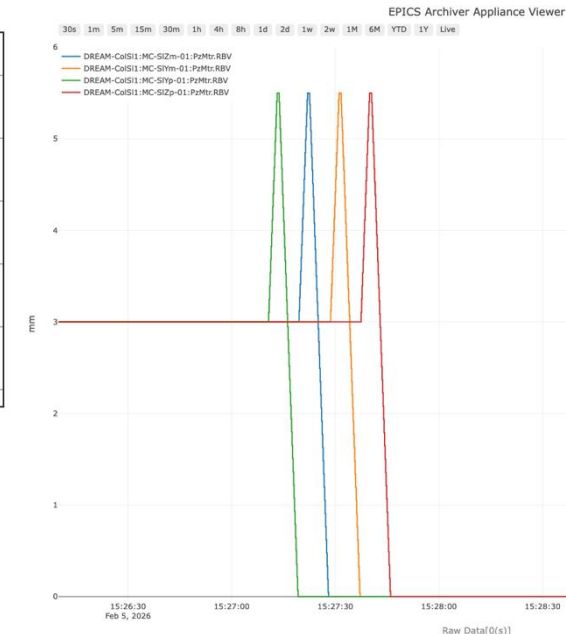
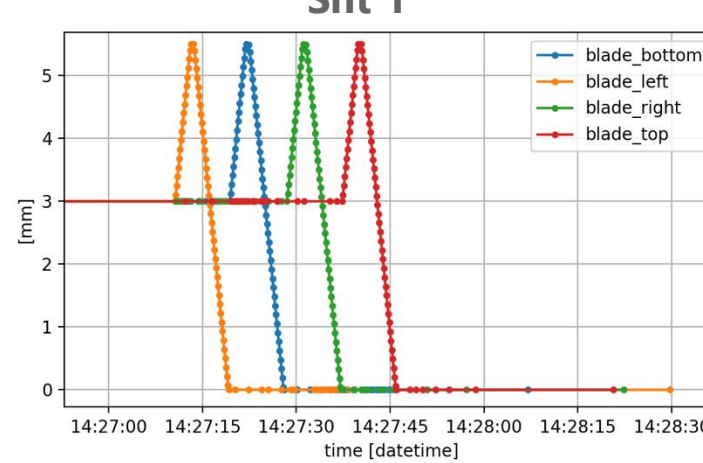
ECDC / DMSC tools

- NICOS used during all tests
- ESS live data tested during integrated tests of detectors
- Content of NeXus files checked with EPICS PVs

Choppers



Slit 1



DREAM

Updates since Oct 2025



Instrument

- Dec 2025-Feb 2026: Integrated tests for choppers, slits, monitors, detectors
- March 26th 2026: System Acceptance Review/Tollgate 5

ECDC / DMSC tools

- NICOS used during all tests
- ESS live data tested during integrated tests of detectors
- Content of NeXus files checked with EPICS PVs
- Test of data reduction during HERCULES School (Scipp)
Simulated ESS NeXus files → reduced data

BEER

Updates since Oct 25



Instrument

- On-going construction
- TG5 scheduled in June 2027



DMSC tools / Data processing

- added to CODA pipeline
- Planning meeting about data reduction for all science cases (Oct 25)
- Training *download from / upload to Scicat* with jupyter notebooks (Nov 25)
- McStas
 - 3D models of $\pm 90^\circ$ detector banks in McStas
 - Gauge volume
 - Benchmarking with SIMRES (Czech IK)
- Powder diffraction data reduction
- “Chopper cascade notebook” in Code Shelf (commissioning tools written by IS)



Common tools

Work in progress

- Discussion with BEER and DREAM teams on how to handle **calibration files in Scicat** :
 - Focus on Powder Diffraction (common science case to DREAM and BEER)
 - Naming
 - Storage

- **Training of instrument teams**
 - DREAM team – beginner level
 - VISA, Desktop / Jupyter lab, folder structure, available analysis tools, Scicat, Scipp
 - Access, display content of *experimental* NeXus files
 - Simple data reduction with *simulated* NeXus files
 - BEER team with Jan-Lukas (Scipp) – intermediate level
 - Data structures in Scipp
 - Plopp

Status

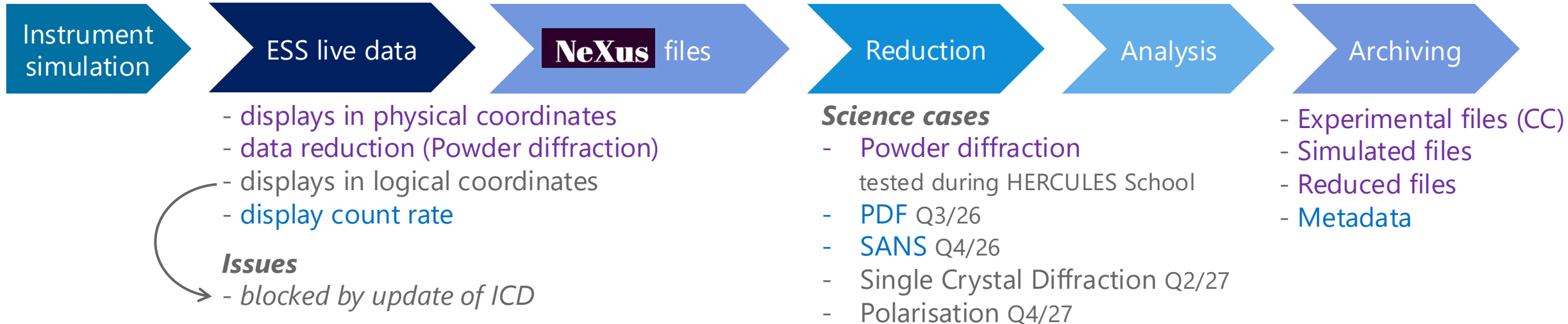
DMSC tools for DREAM



To be updated:
voxel IDs
positions
settings

- Day 1 components
- To be updated

- Main software on VISA
- TOPAS academic on VISA
- Instrument parameter files



Legend

Done
Work in progress
To do



Status

DMSC tools for BEER

- 3D detectors
- Day 1 configuration
- SE



No implementation for BEER

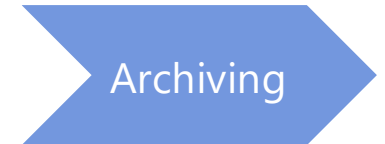
- Day 1
- Specific SEs (hexapod)



Science cases

- Powder diffraction Q2/26
- Strain scan Q4/26
- Texture Q3/27
- In-situ /operando Q4/27

- Main software on VISA
- Instrument parameter files



- Experimental files
- Simulated files
- Reduced files
- Metadata

Legend

- Done
- Work in progress
- To do



Development plan

Short-term

DREAM

- Detailed HC plans
 - gather tools for data processing (McStas, Scipp)
 - measure standard samples at X-ray lab diffractometers (ESS) to test parts of pipeline (Scicat, analysis)
- Update McStas model following integrated tests
- Finalise PDF data reduction workflow

BEER

- Peak profiles for BEER (done by instrument team)
- ESS NeXus files with first SE for BEER