

# Instrument Data Scientist for Imaging and Engineering Diffraction

ODIN and BEER

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### ODIN

#### Towards first science

# ess

#### **DMSC** deliverables

#### CC:

- NICOS, archiving in Nexus files (ECDC), SciCat (SIMS)
- For TPX3cam second route through LoskoVision event formation is needed (ECDC)

#### HC:

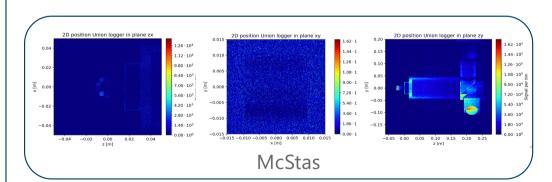
- Data reduction pipelines for att. tomography and Bragg edge analysis, Visualization, archiving derived data in SciCat
- HC package

#### First science:

 Ability to carry out full tomography and bragg edge analysis – specific science cases & collaborators TBD



Muhrec on VISA platform



## Progress for ODIN



#### **Successes / achievements**

- Constructive discussions with ODIN and ECDC through weekly meetings
- Muhrec is running on VISA
- pymuhrec tested on Ubuntu

#### **Failures / setbacks**

 Potential setback since the IS of ODIN, Manuel Morgano, is leaving ESS

- New SSD Christian Vedel in DRAM data analysis team - development of imaging analysis programs
- X-ray source for ODIN is ready to be delivered – integration before HC?

**Opportunities / accelerating measures** 

Finding replacement for IS

Threats / risks

# Data pipeline status

#### **ODIN**



Instrument simulation

• McStas ToF simulations of att. tomography & bragg edge data

Data reduction

- Nexus reader includes: ToF, white beam, stroboscopic data. Write McStas data to nexusfile
- (WFM stitching), neutrons to image-stacks (readable by Fiji)
- Masking image regions, image normalization

- Muhrec standalone on VISA, pymuhrec on VISA, Visualization (VGstudio, Dragonfly), PyVista (in Notebooks)
- "easyBragg" Bragg edge fitting tool
- HC package: Detector resolution, beamprofile fits (space & time), Fit chopper settings (if possible), McStas simulations with various settings of the chopper parameters

Data archiving • Archive results from Tomography & Bragg edge analysis in Nexusfile & SciCat

Modalities related to polarized neutrons are not part of day one operation

**Done**In progress
ToDo

### Plans & schedule for ODIN

#### From now to Hot Commissioning

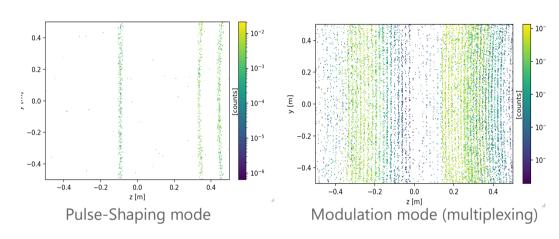


- M1: Nexus format & meta-data definitions in SciCat completed (ECDC+SIMS) June 1st 2024
- M2: Data formats for derived data (Tomography and Bragg edge) defined July 1st 2024
- M3: Acquisition of YMIR tomography data through NICOS. Reduction, reconstruction and visualization on the VISA platform, archiving in SciCat - October 1st 2024
- M4: Notebook for Bragg edge fitting, tested on McStas ODIN data and real (non WFM) Bragg edge data, archiving in SciCat Dec 1st 2024
- M5: Hot Commissioning package Feb 1st 2025.

### Status for BEER



#### McStas simulations



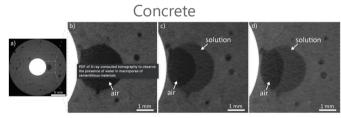
- McStas simulations with detectors in +-90 degree positions
- Main objective for BEER is a functioning data reduction method for modultion mode
  - Work is ongoing
- Next, meeting with the BEER Team on DMSC deliverables
- Completion date for DMSC deliverables is currently end of 2025
- TG5 for BEER is Oct 2026

### Concluding remarks

#### **Necessities and Opportunities**



- New IS for ODIN is needed
- Very important that Christian Vedel joined DRAM analysis team
- A second route for event formation from Tpx3cam using LoskoVision data reduction software is important as reference to EFU by ESS
- X-ray source for ODIN is ready to be delivered
  - Opportunity to get started on cone beam X-ray measurements
  - Muhrec can reconstruct cone beam x-ray data (ICON @ PSI)
  - Test ODIN setup before neutrons
  - Extra scope for ODIN extra resources for integration are needed



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