



# Instrument Data Scientist for Diffraction

DREAM and MAGIC

PRESENTED BY CÉLINE DURNIK

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# Agenda



- 1 Updates from Lund

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- 2 SWOT analysis of Diffraction project

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- 3 Plans and schedule

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- 4 Status of Diffraction pipelines

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- 5 Conclusion

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# Diffraction @ ESS



## News from Lund

### Instrument

#### **DREAM** (Tranche 1)

- *Science cases:* Powder diffraction, Single crystal, PDF, SANS, polarized cold neutrons
- Endcap detectors tested at Utgård and installed at ESS

#### **MAGIC** (among first 8 instruments)

- *Science cases:* polarised single crystal diffraction
- installation started

### Staff

#### **DREAM**

- Mikhail Feygenson: DREAM instrument scientist  
→ head of Diffraction & Imaging division
- Florence Porcher: Project scientist for DREAM in Lund

#### **MAGIC**

- No scientific staff in Lund
- Instrument scientist to be recruited



Visit at Utgård



Installation of endcap detectors



MAGIC cave



# Progress for DREAM & MAGIC

## SWOT analysis

### Successes / achievements

- good communication with DREAM instrument team through weekly meetings
- instrument simulation for DREAM (McStas/GEANT4)
- simple reduction pipeline for Powder Diffraction for DREAM using Sciline
- JIRA boards for cold, hot commissioning, first science

- DREAM test datafiles collected by ESS detector group (Utgård) → commissioning tools
- beamtime at SXD ISIS
- ErUM data project: (PhD) on IA tools to identify phases in diffraction patterns
- post doc to develop polarisation reduction workflow
- discussions on First Science during Diffraction STAPs

### Opportunities / accelerating measures

### Failures / setbacks

- WFM stitching
- no final design for raw NeXus file (mask, storage of instrument geometry)

- new instrument scientists to be recruited (replacements for Mikhail and Xavier)
- no scientific staff on site for MAGIC
- no ToF support in new version of EasyDiffraction
- align priorities between teams & keep JIRA boards up to date

### Threats / risks



# Plans & schedule

## Major milestones or Gantt chart

### Three medium-term milestones

1. Powder diffraction processing pipeline
2. PDF processing pipeline
3. Real-time powder diffraction processing pipeline

} Monthly report  
(Confluence page)

### JIRA boards for DREAM and MAGIC

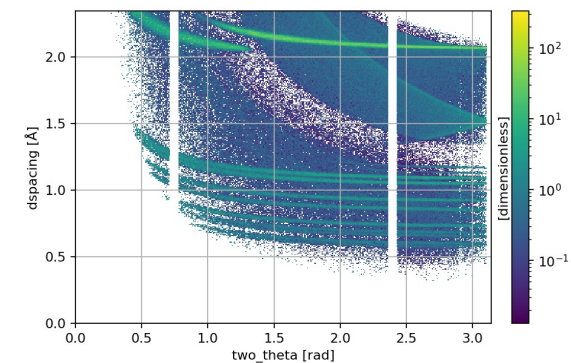
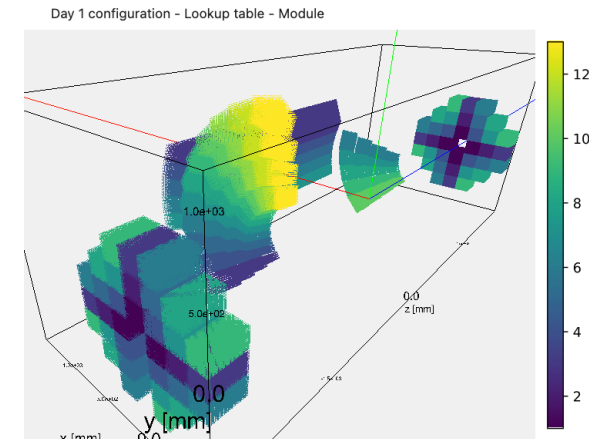
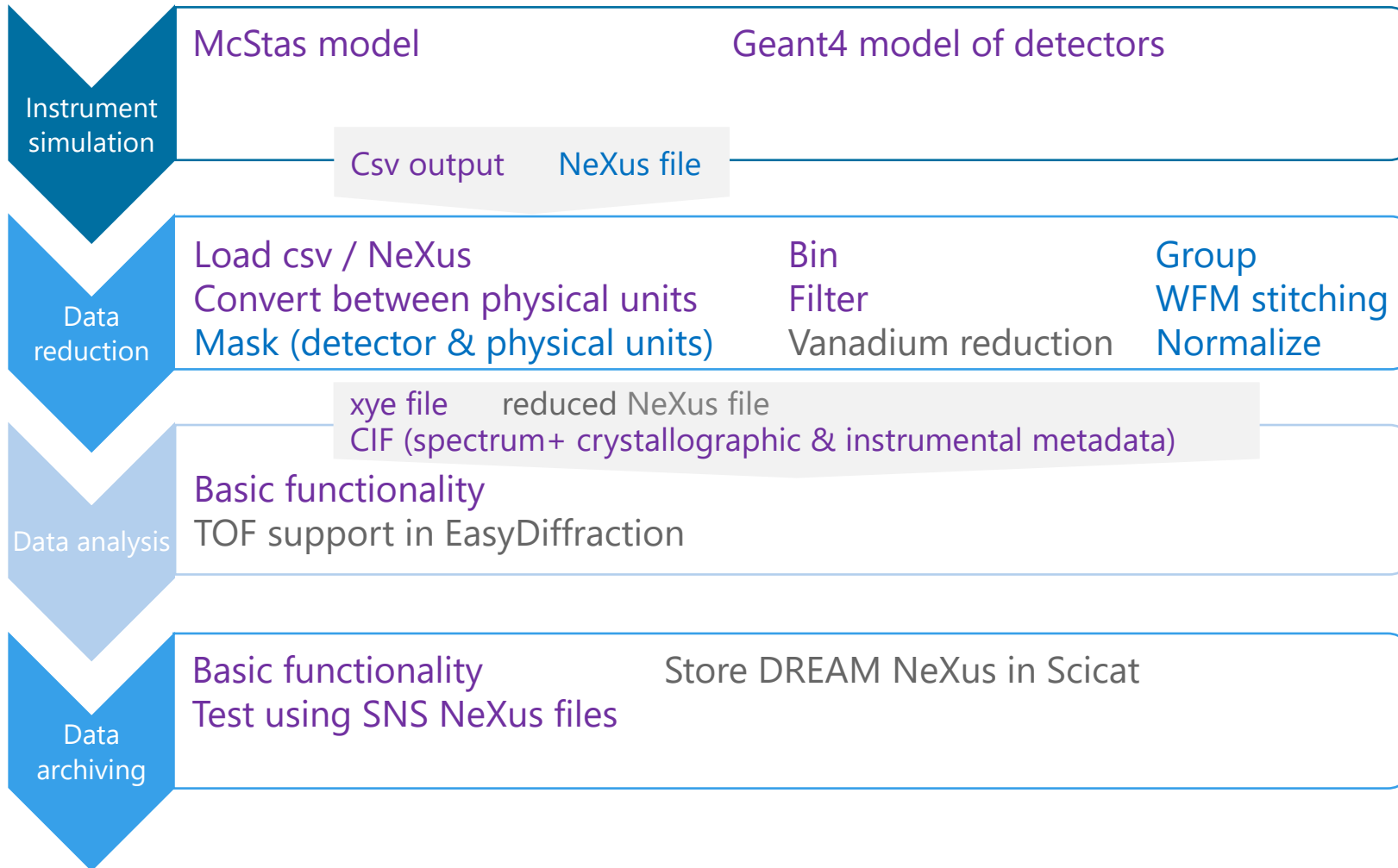
- DMSC tasks for cold commissioning, hot commissioning, first science



- Discussions about First Science for DREAM during Diffraction STAP (Oct 2023 and April 2024)

# Data pipeline status

## Powder Diffraction

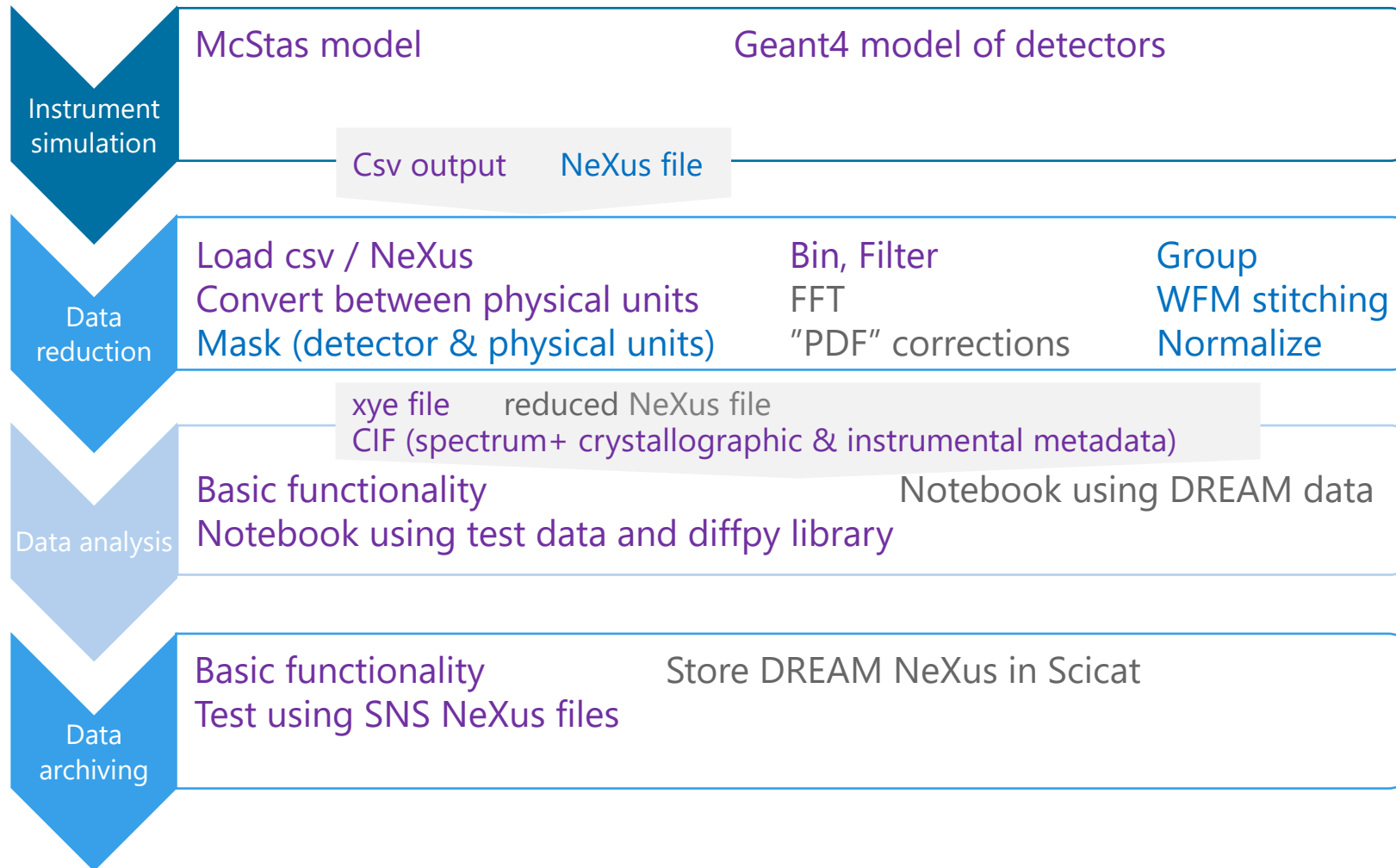


Legend: Done In progress To do

# Data pipeline status



PDF



Legend: Done In progress To do



# Concluding remarks

## Diffraction @ ESS – IDS point of view

- Some progress in the development of the data processing pipelines
- Uncertainty related to move to DTU
  - no clear definition of IDS role,
  - connection to ECDC and instrument teams
  - daily commute
- High staff turnover → uncertainty in distribution of work and preserving expertise