

DREAM update for STAP

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DREAM components

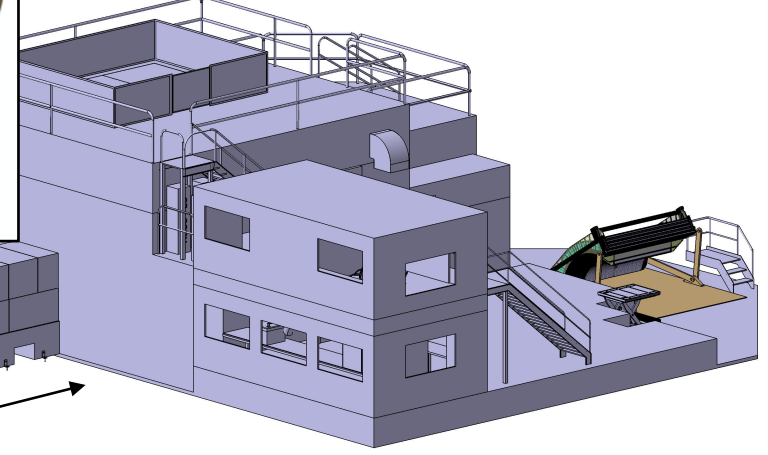
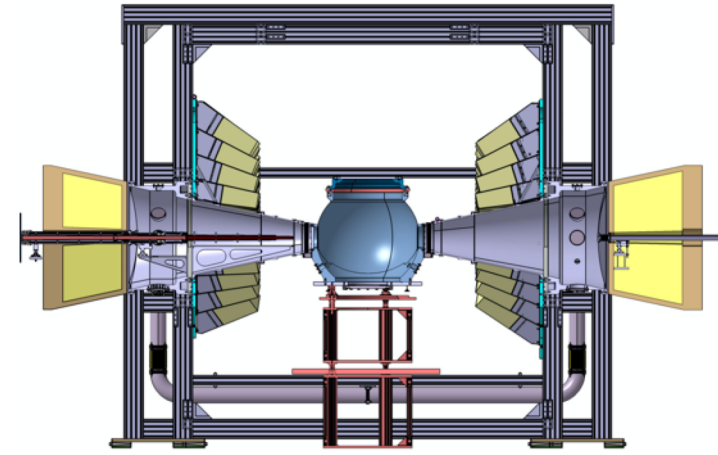
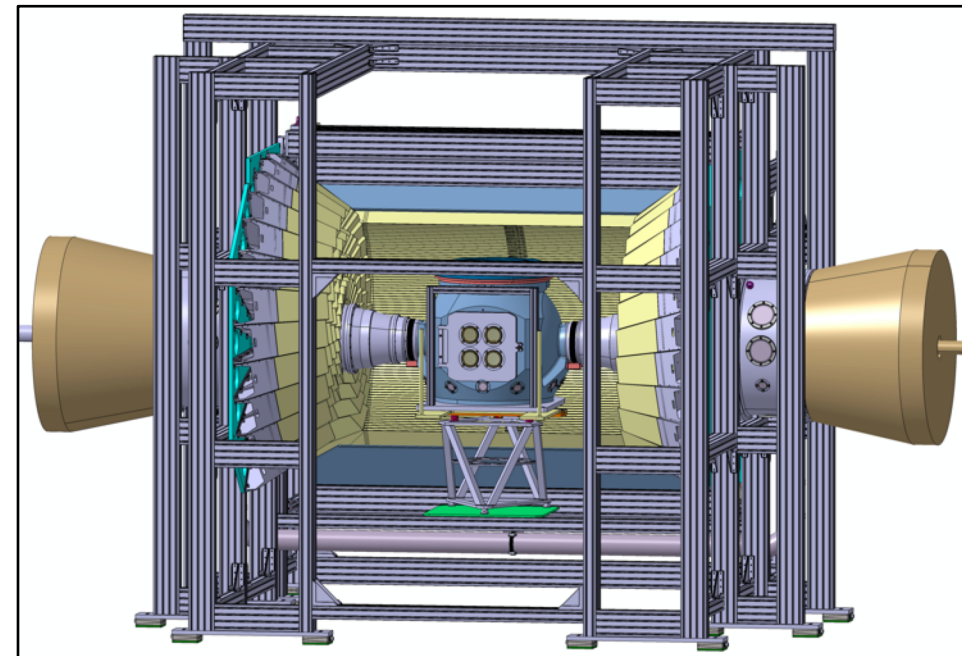
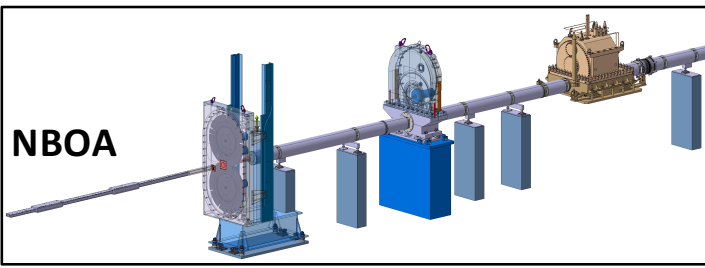
Partners: FZJ (76%)

LLB (24%)

Detectors & support

Sample vessel & support

PSC Band control T0



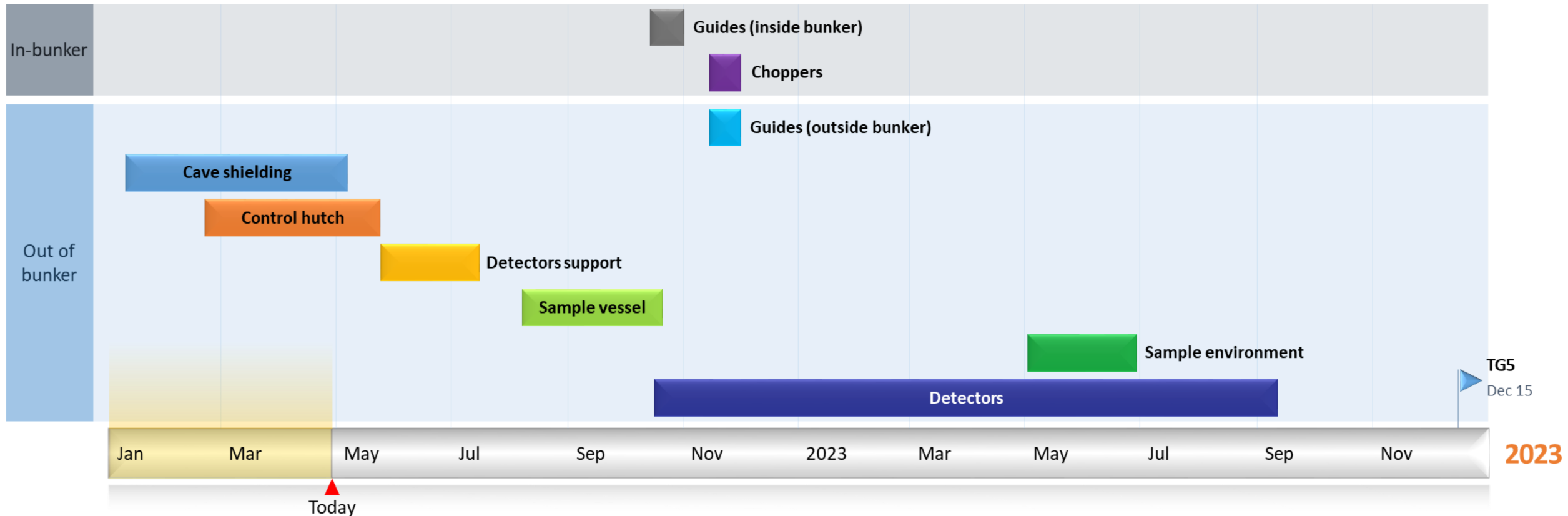
Elliptic-ballistic neutron guide

50 m

Control hutch & sample prep lab

Cryofurnace

Schedule update



- Final design review (TG3) is scheduled in June 2022 (SEE, CUP, CEP, PSS are excluded)
- TG5 is scheduled for December 2023
- DREAM will be ready for first neutrons in 2024/25

Neutron Beam Optics Assembly / Bridge Beam Guide / Bi-spectral Switch

NBOA



BBG



Bi-spectral switch

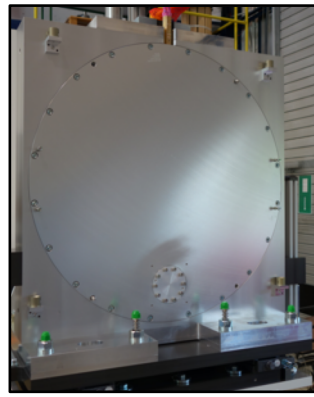
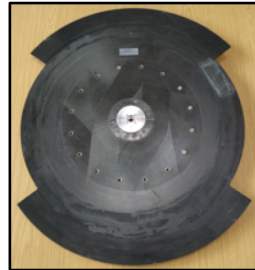
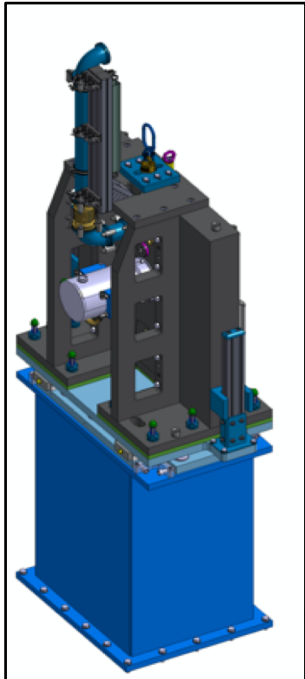
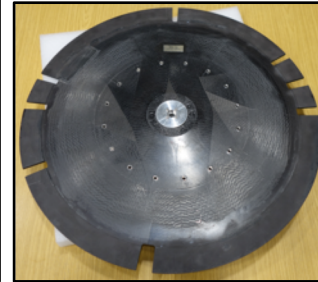
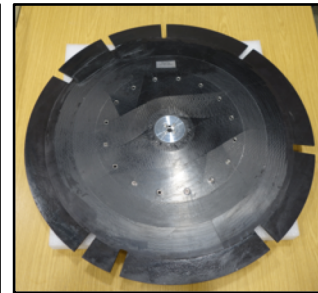
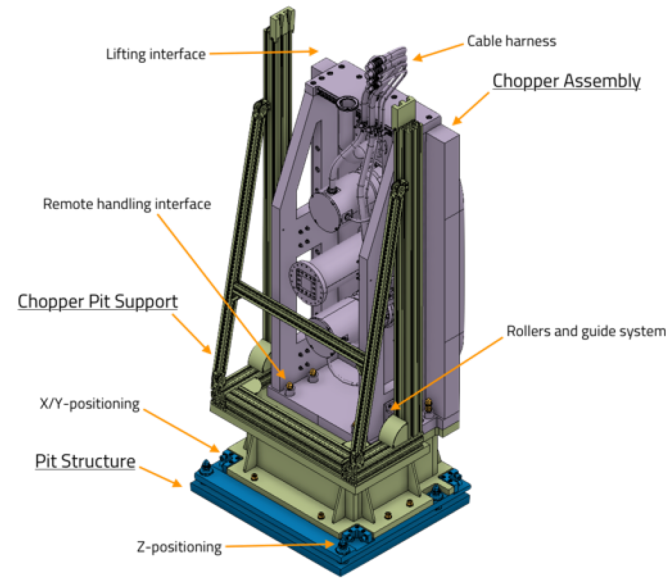


- NBOA & BBG are delivered to ESS & FZJ (neutron tests done at ILL & PSI)
- Bi-spectral switch is assembled at FZJ
- Neutron tests for the switch & BBG at ISIS in July 2022 (IMAT)

Chopper system

Pulse Shaping Chopper (308 Hz) & Overlap Chopper (14 Hz) Band Control Chopper (112 Hz)

- Vendor: Jülich Chopper Group
- Disks are manufactured (Airbus)
- Housings & bases are manufactured (FZJ)
- Remote handling tests were successful
- Commissioning at SKF is on hold



T0-Chopper (ESS)

- Manufactured
- FAT in September 2021
- SAT Q2 2022
- Ready for installation in 2022



Chopper tests at SKF

- Chopper disks and housings were delivered to SKF for final assembly & tests
- BC chopper reached target speed of 112 Hz
- Failure of the hub was observed during the endurance tests
- Further tests are halted. Disks were shipped back to FZJ

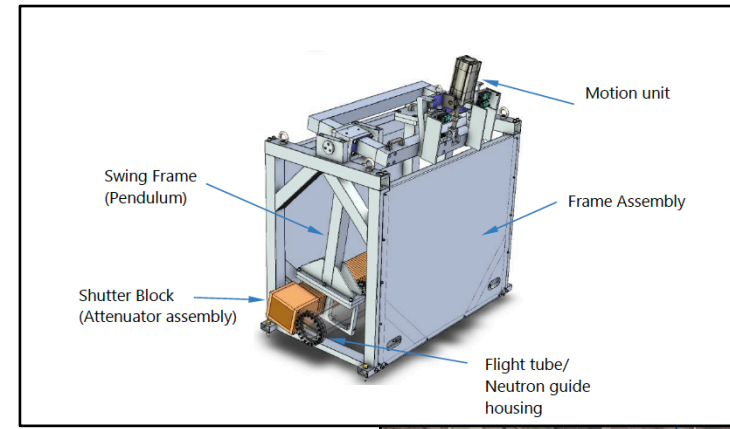
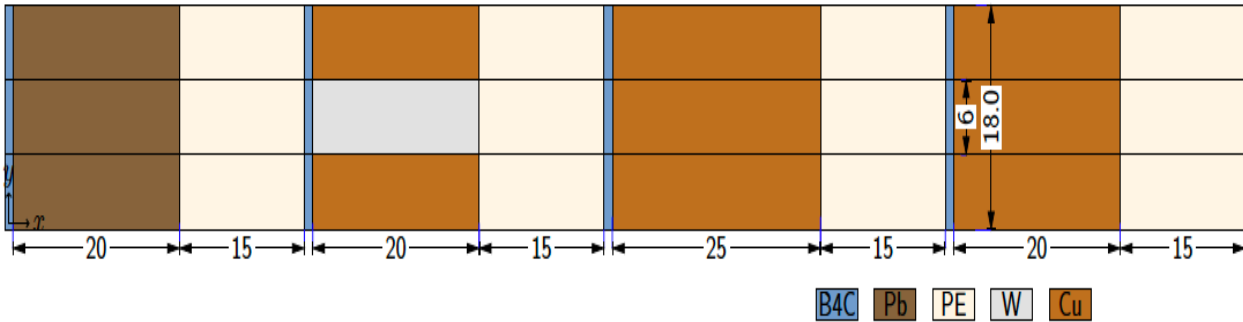


Next steps

- ESS chopper group was informed
- Re-checking quality certificate of hub material,
- Fine balance of the discs directly on SKF spindle
- Re-checking the balance report for all disks
- Planned delivery in Q4 2022

Heavy shutter (ESS)

Shutter block composition

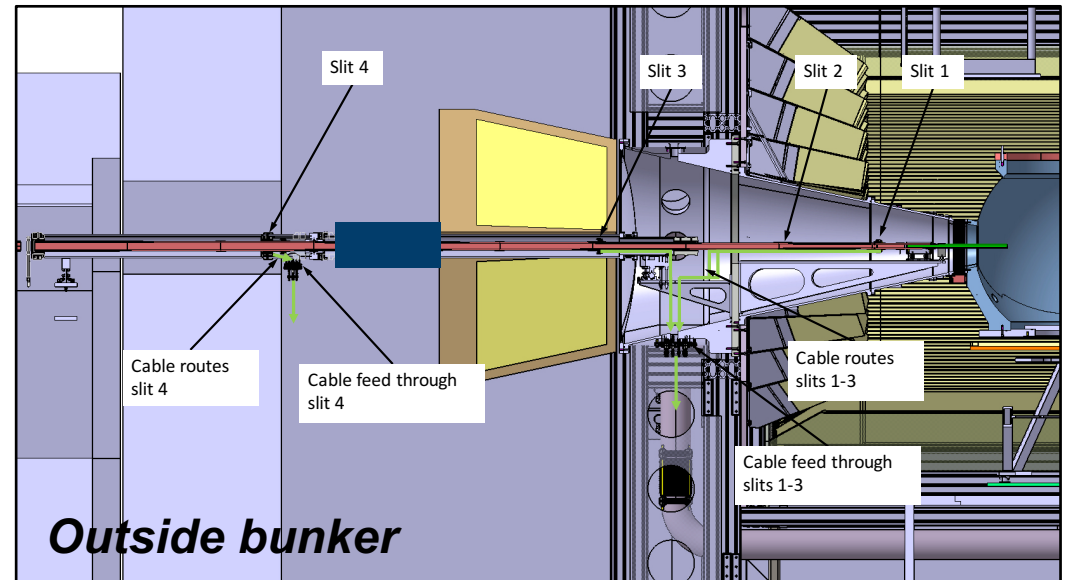
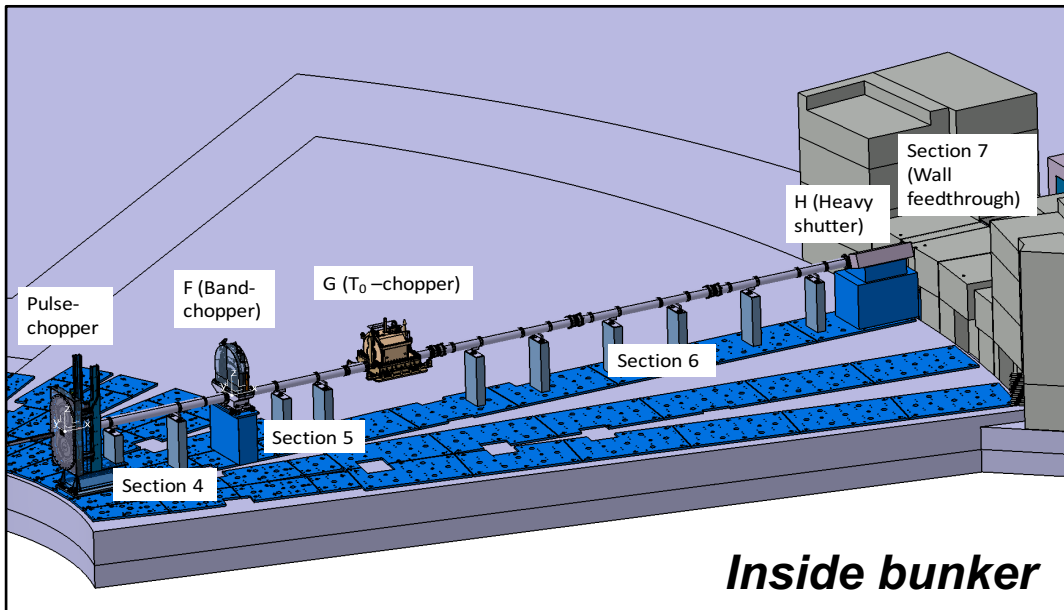


- Neutronics simulations are done by FZJ
- FAT of mechanical parts was accepted in August 2021
- Manufacturing is completed



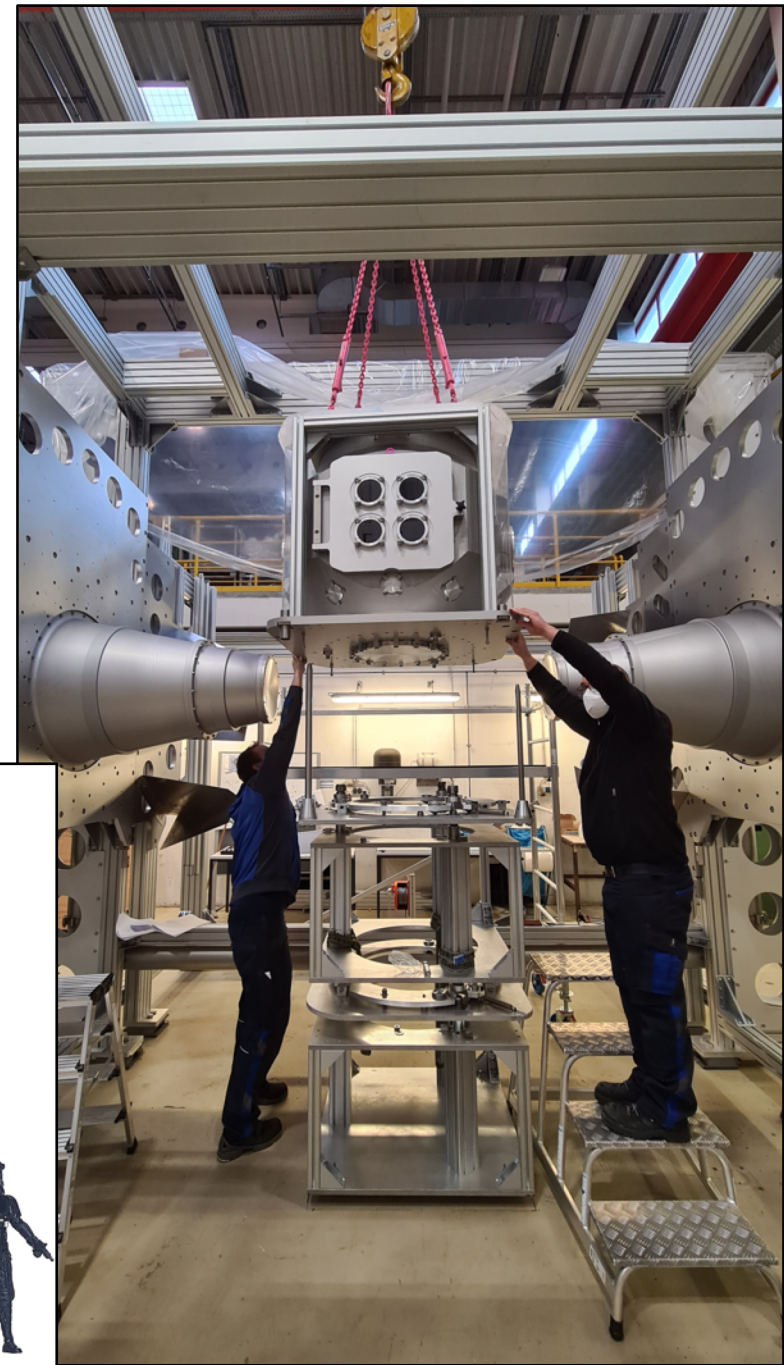
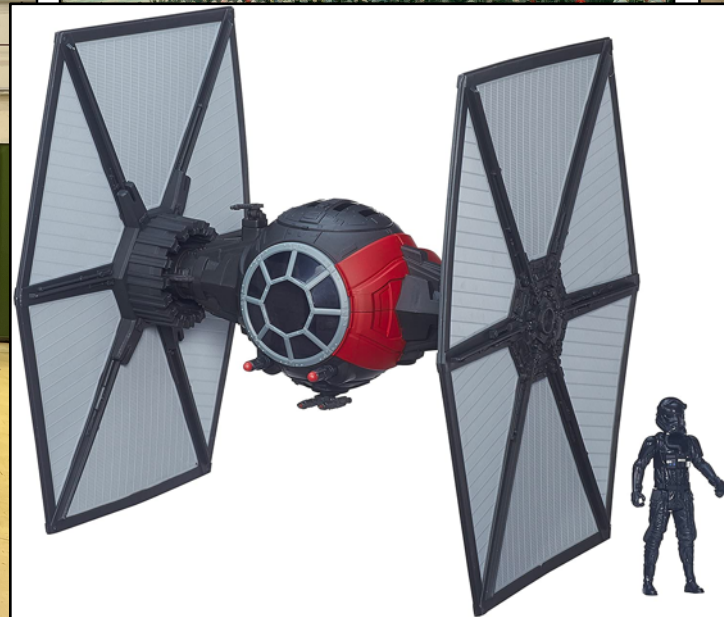
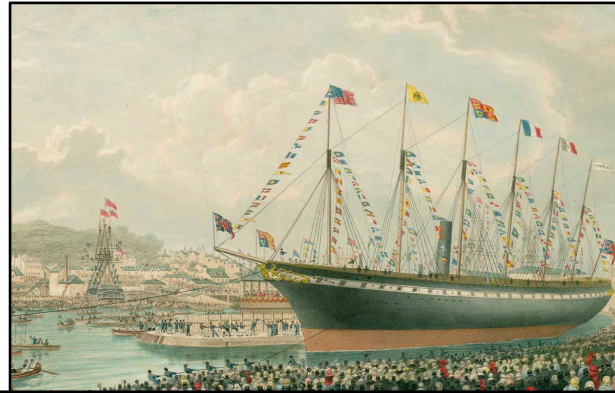
Neutron guides

- SubTG3 for in-bunker is completed
- SubTG3 for out-of-bunker is completed (except for the last section)
- In-bunker guides manufacturing is ongoing
- Installation: Q3 2022 in-bunker & out-of-bunker
- Last section of will be installed Q1 2023
- Detailed installation plan was developed with ODIN, ESS and SNAG

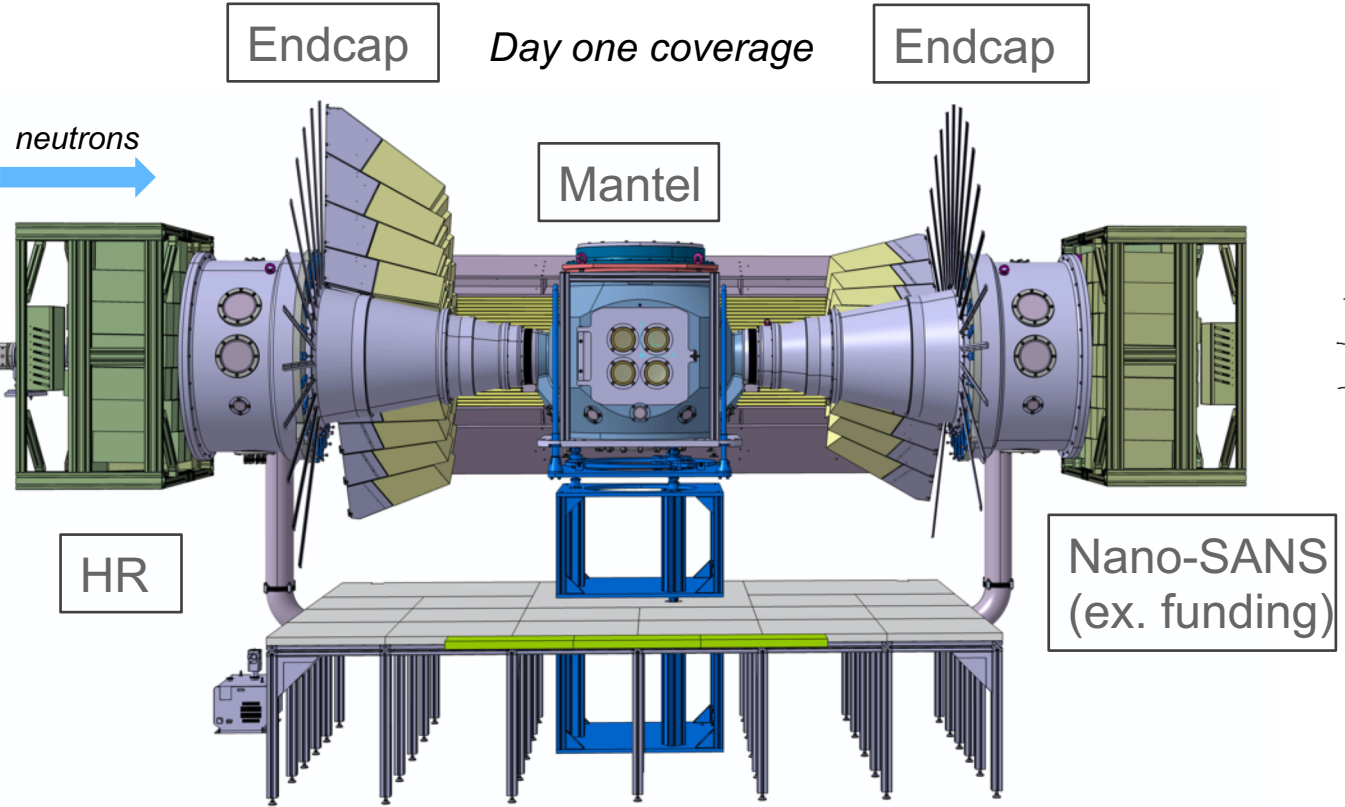


Sample vessel

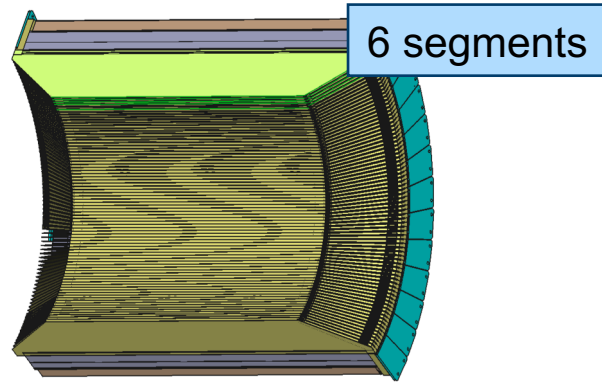
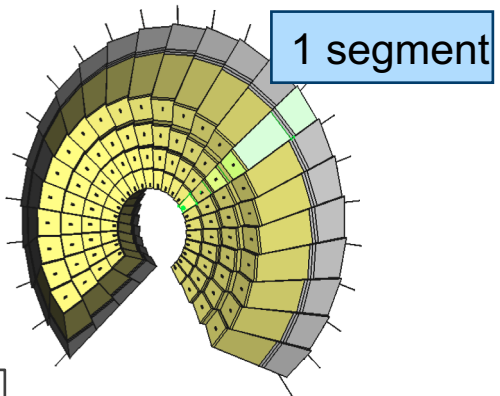
- Manufacturing is completed
- Successful vacuum and leak tests with ESS vacuum group
- Lifting tests and integration with support are done
- Installation at ESS in Aug. 2022



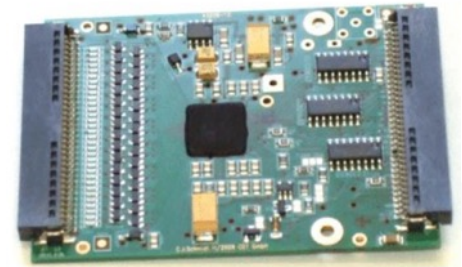
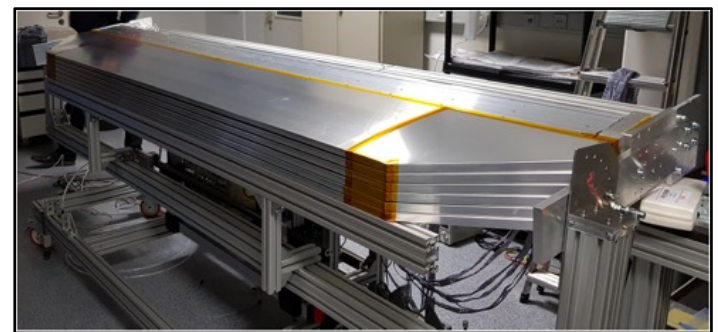
Detectors



Provider CDT GmbH
Prototyping of first segments (0-series production)

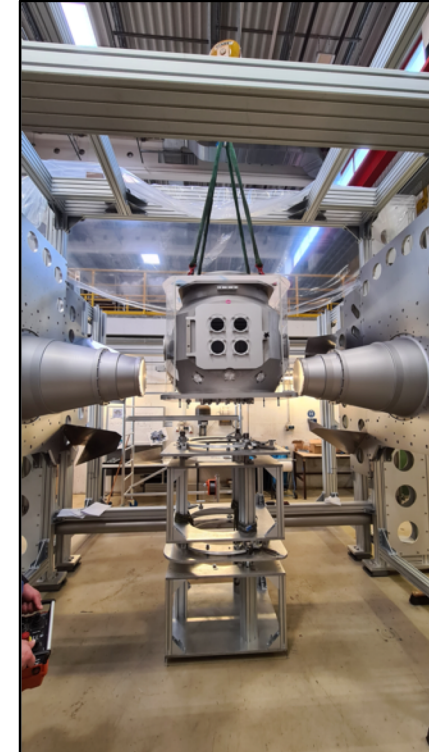
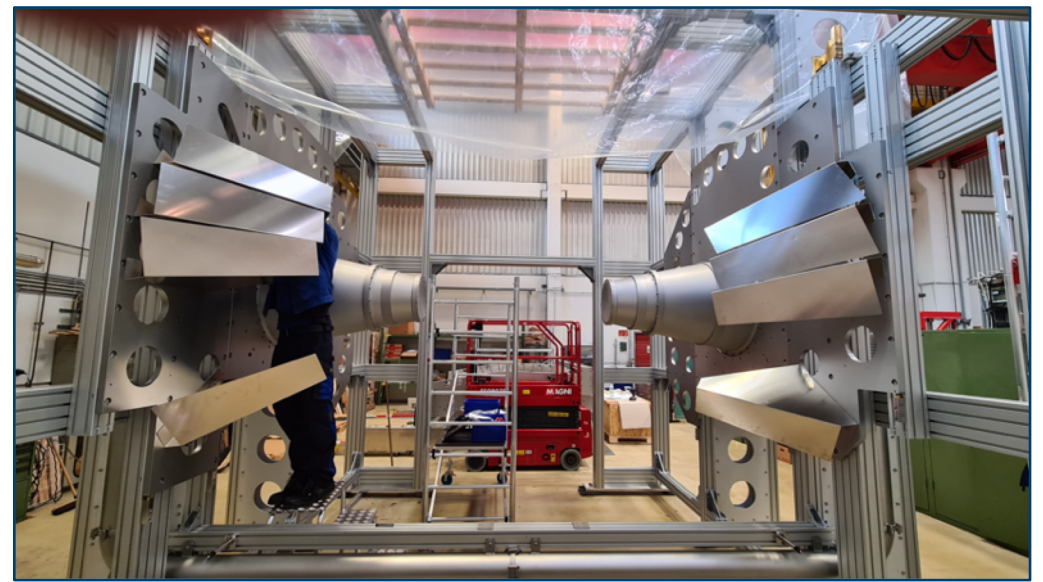


- Endcap & mantle first segments are successfully tested with neutrons
- Endcap: prototype is done, serial production ongoing
- Mantel: prototype is done, serial production ongoing
- Procurement of HR is completed
- Procurement of Nano-SANS is completed



Detector support

- Laser-tracker verified accuracy of alignment
- Endcap & mantle dummies are manufactured
- Various assembly tests with dummies were done
- Delivery to ESS in May 2022
- Installation in June 2022



Experimental cave

- Installation of shielding is complete
- SAT is scheduled on May 5th 2022
- Motor for moving platform will be delivered later



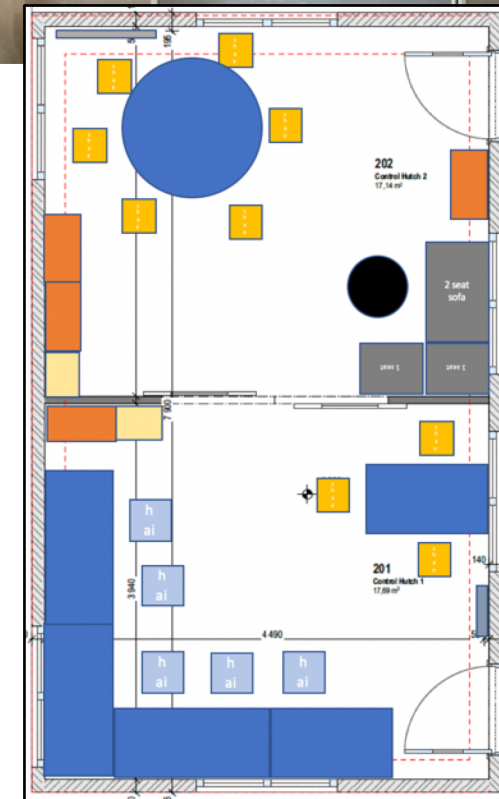
Cave crane

Beam stop in 2nd cave



Control hutch & sample preparation lab

- Final stages of installation
- SAT in end of May 2022
- Furniture & benchtop quotes are received



DREAM cryofurnace sample changer



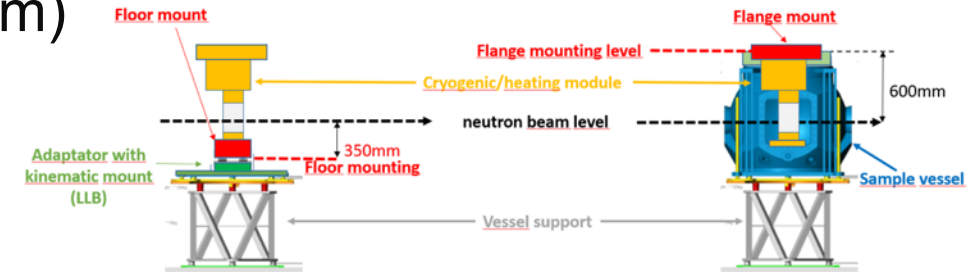
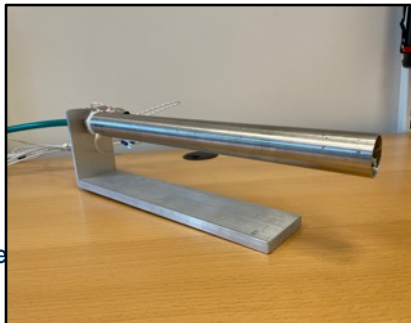
- 3 unsuccessful tenders
- 2 requirements were relaxed (longer cooling time, sample position measurement along 3 axis with accuracy < 1 mm)
- Schedule was relaxed
- Last tender: One bidder. Price is too high

Next steps

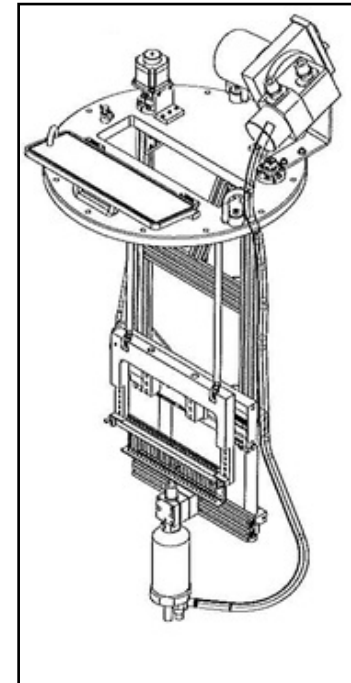
- Transfer to ESS for new procurement
- Presentation at SEE STAP:
alternative robot-arm design (ISIS)
- Other back up options

Cryo-jet
& heat gun

Mitglied der Helmholtz-Gemeinschaft

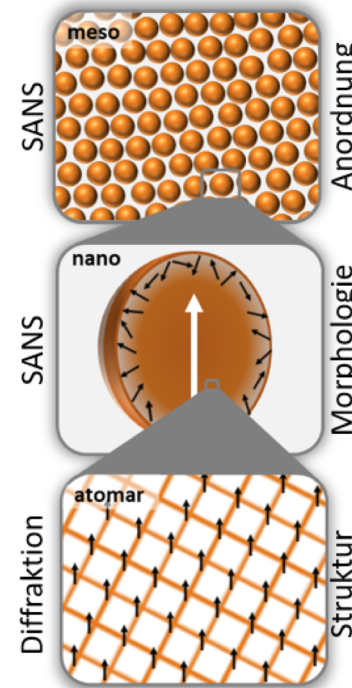
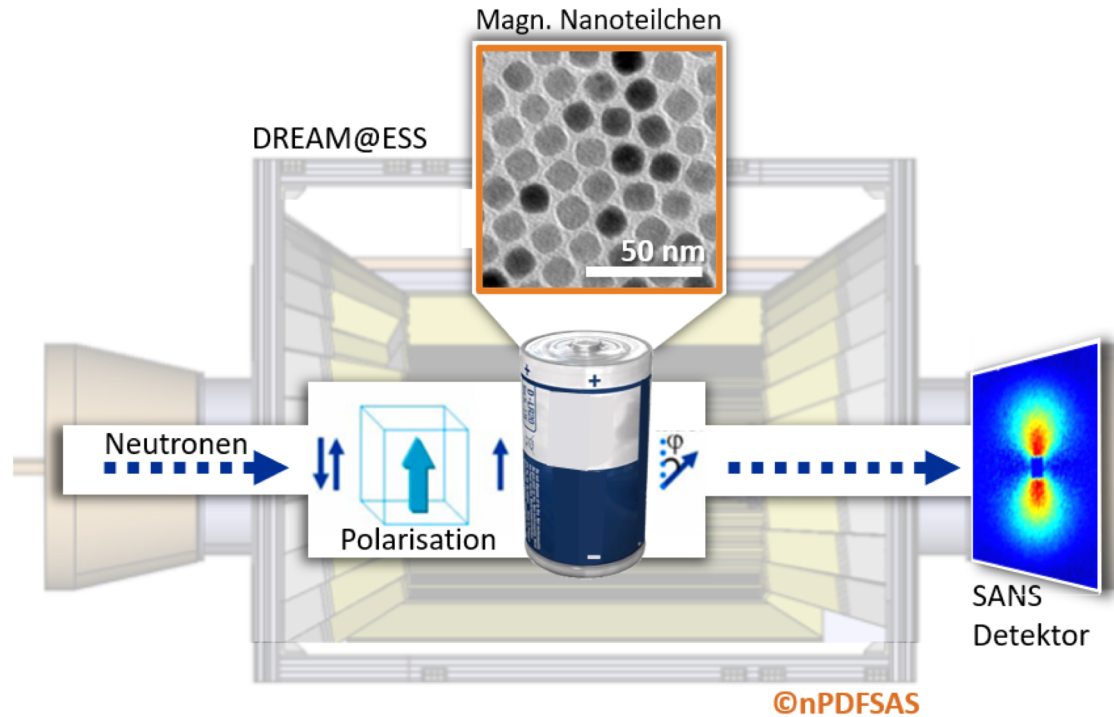


Linear stage with N cryostream (90 – 500 K)



RAC project

nPDFSAS: Simultaneous polarized SANS and NPDF methods to study novel electrode nanomaterials



UPPSALA
UNIVERSITET



*Optigrade laser
system*

*Representative
Neodeltamagnet*



- Nano-SANS detector is procured
- Magnets for guiding field are tested at Delft University
- Laser system for polarization cell are purchased
- Problems hiring personnel at Cologne University
- In-person half-project review at ESS/MAXIV in Sept. 2022

Other updates

- Quote for common electrical project was accepted
- Common shielding 25 % blocks on site (ODIN cave)
- Instrument hazard analysis is completed
- PSS ConOps are under review
- Finalizing requirements for CUP
- Integration meeting between CEP, PSS, CUP (26.04)
- TG5 is scheduled for December 2023



Issues

- Permanent relocation of Florence is pending
- Cryofurnace procurement delays
- BC chopper hub failure