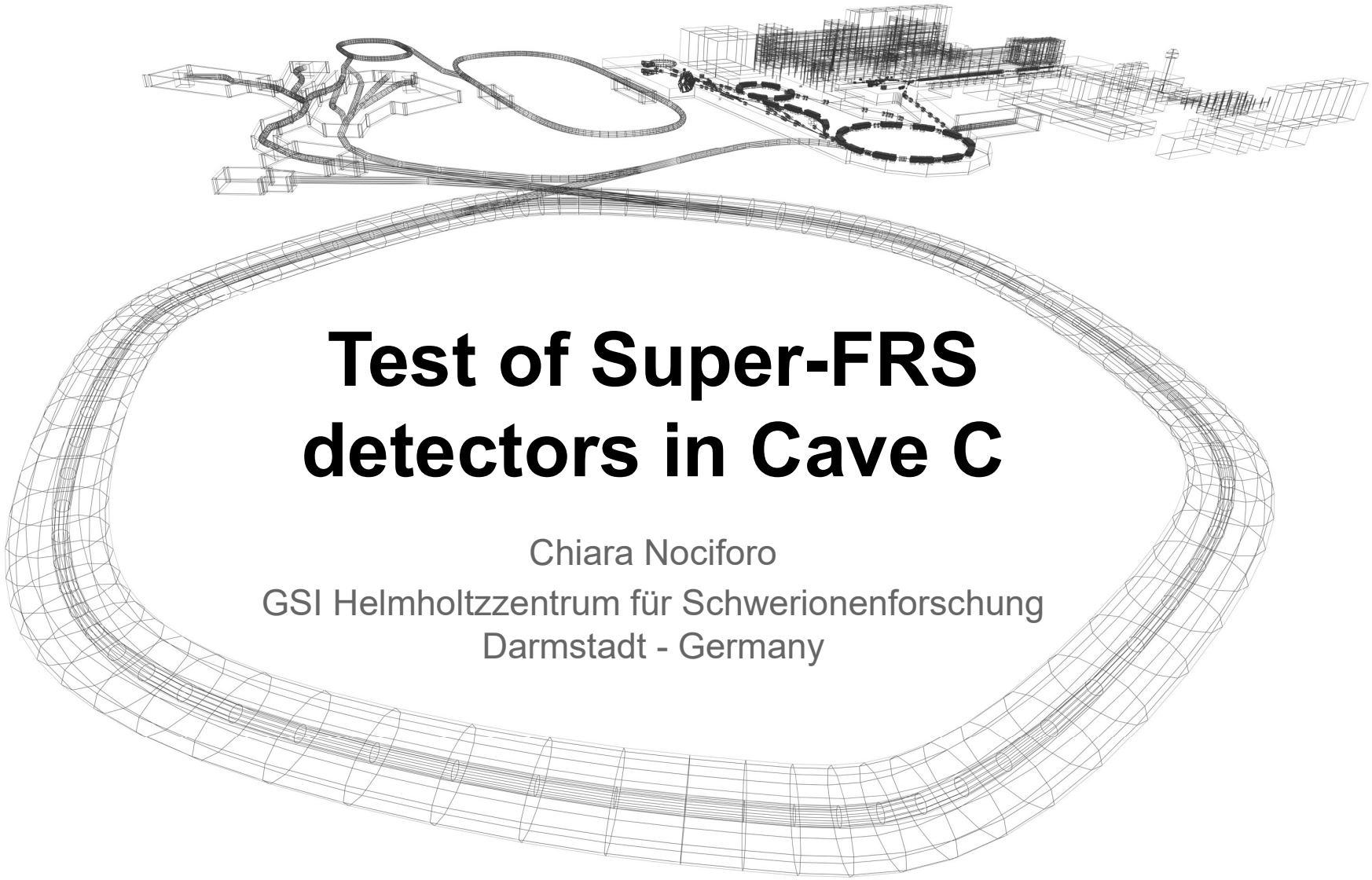
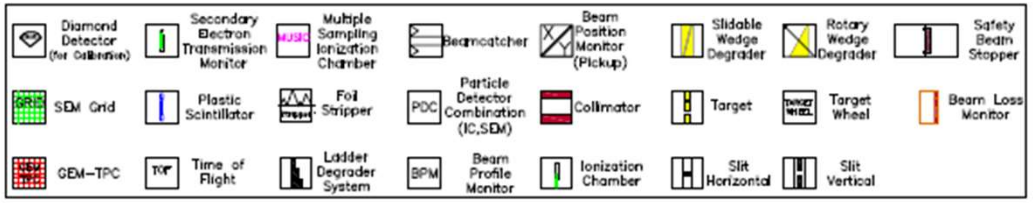


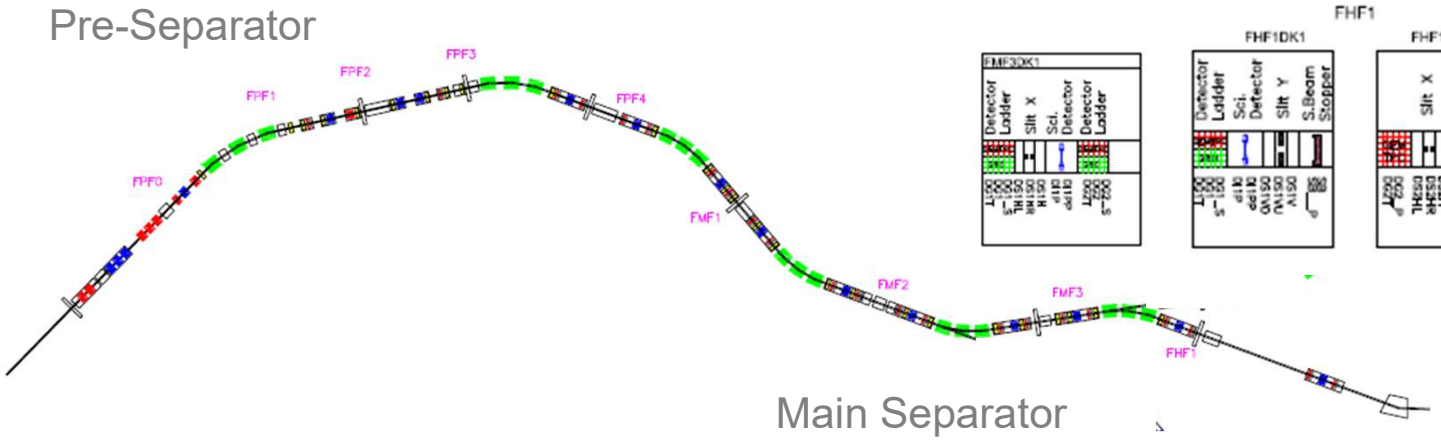
Test of Super-FRS detectors in Cave C

Chiara Nociforo
GSI Helmholtzzentrum für Schwerionenforschung
Darmstadt - Germany

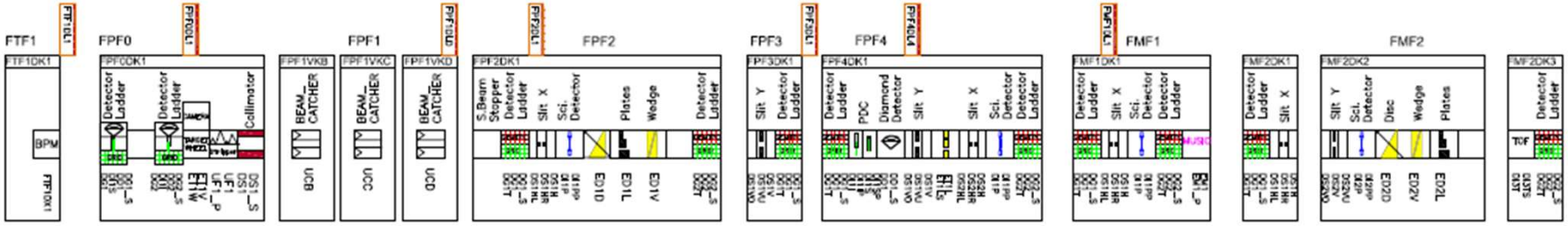
SFRS BI (ES)



Pre-Separator



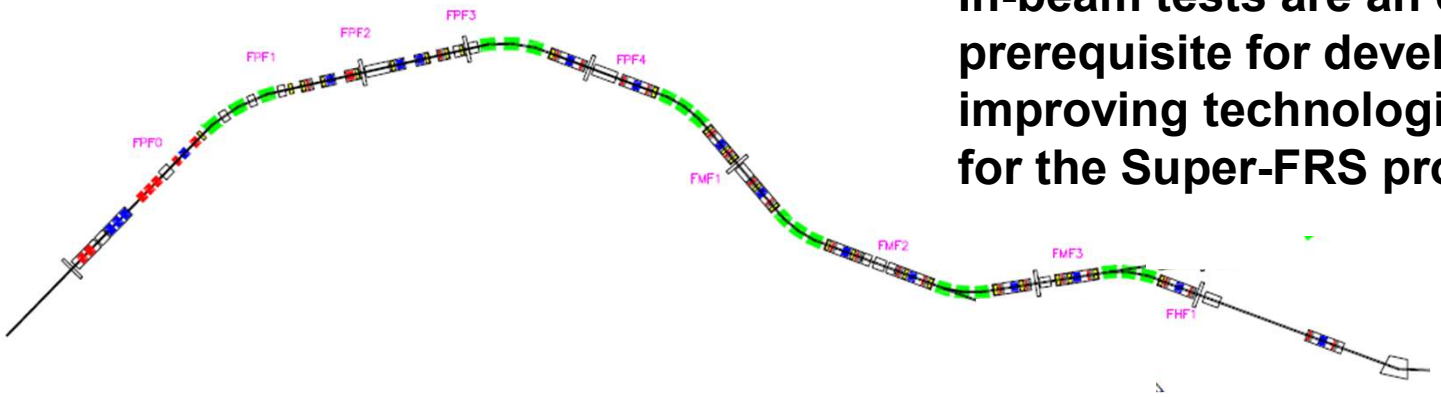
Main Separator



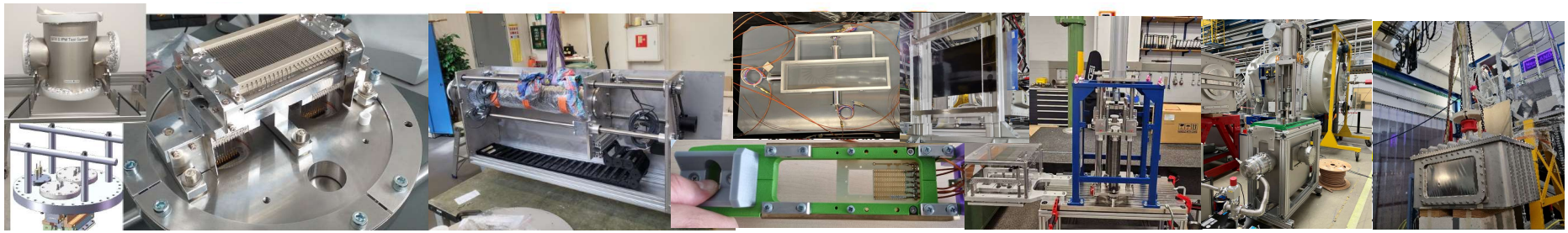
SFRS BI (ES)

- IPM
- SciFiber detectors for tracking
- MUSIC with its own drive
- Plastic Scintillator with its own drive
- PDC and SEM detectors at the target
-

Challenges concern the FoS which are currently under production



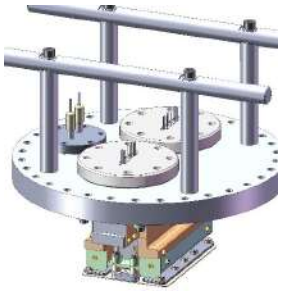
In-beam tests are an essential prerequisite for developing or improving technologies needed for the Super-FRS project

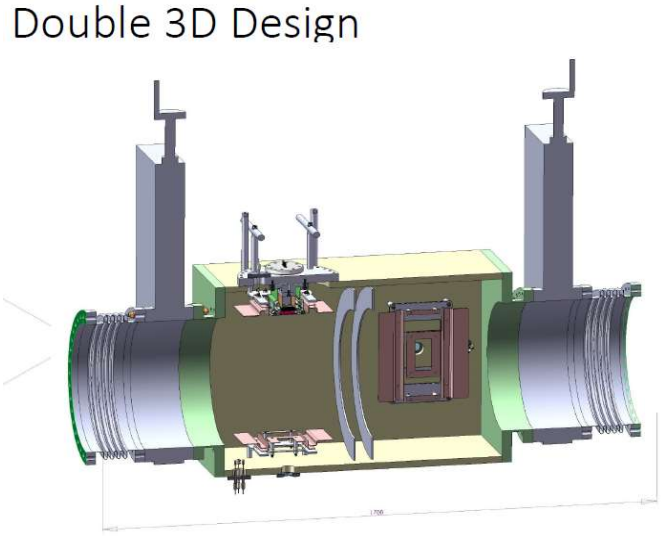


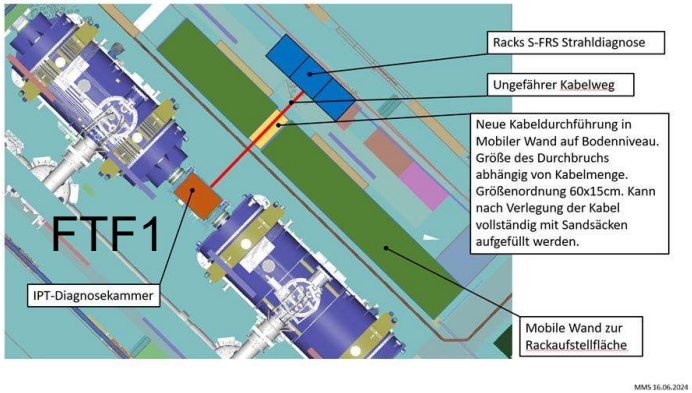
SFRS IPM at FTF1

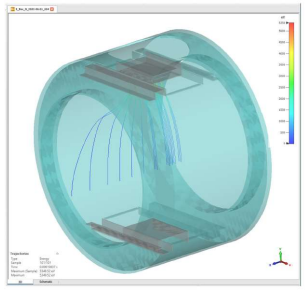
C. Nociforo,
T. Giacomini,
S. Purushothaman et al.

The IPM is a non-destructive diagnostic device operating on primary electrons after residual gas ionization.









Simulations by T. Giacomini

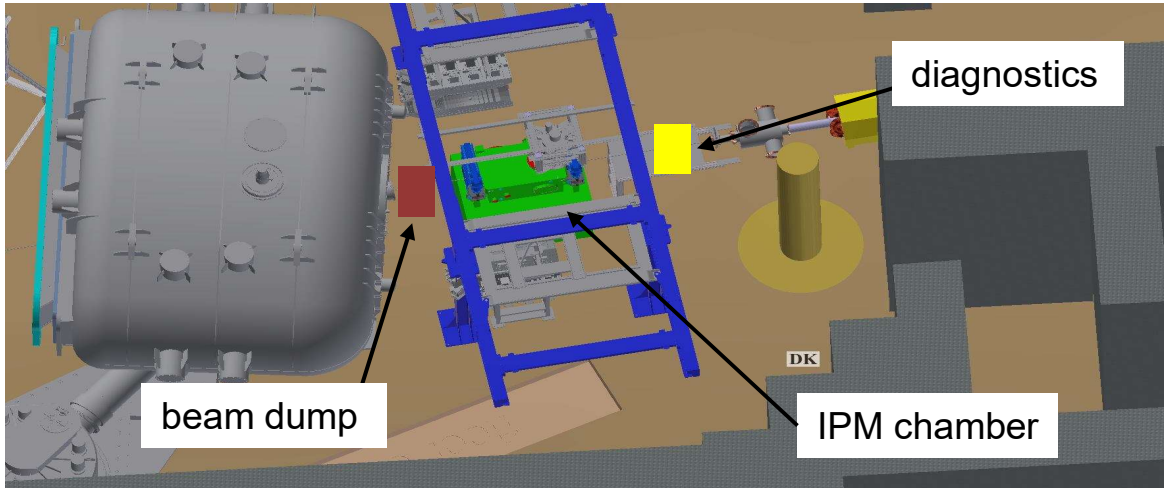
The peculiarity of the SFRS IPM is the design able to provide the beam position and the beam profile for a **400 mm** wide chamber with MCP x/y detector widths smaller than the beam diameter.

SFRS IPM test

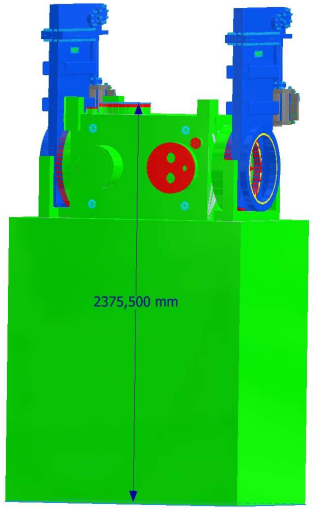
C. Nociforo,
T. Giacomini,
S. Löchner et al.

- **7-9 Feb 2025**, **Kr** primary beam E_{SIS}=0.4 GeV/u up to 10^8 ions/s

IPM setup



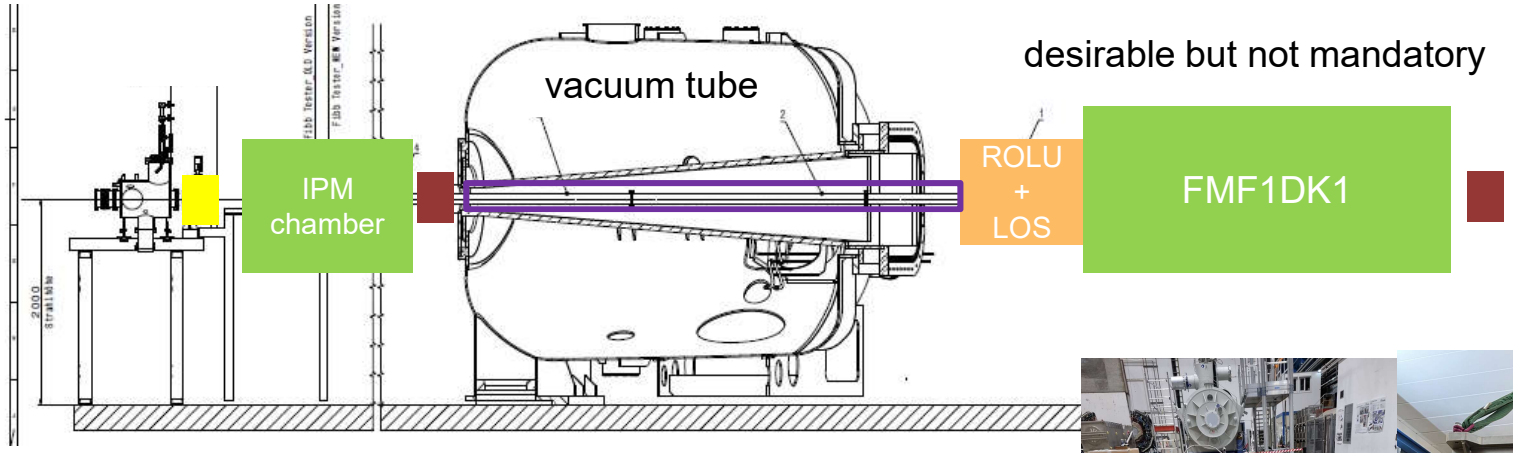
FTF1DK1

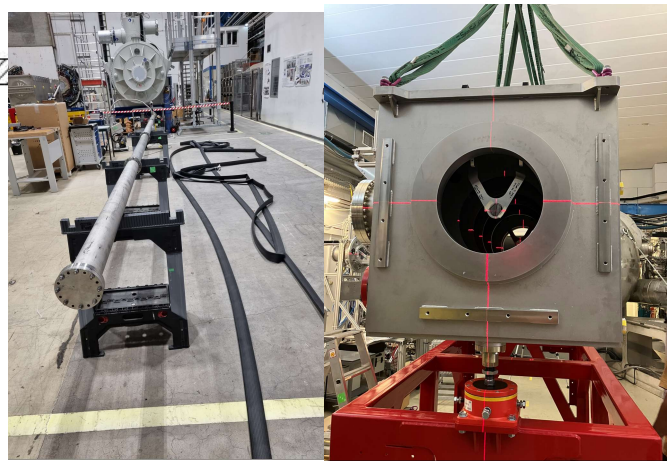


- 2 weeks min. access to cave and 1 week to dismount
- entrance through the chicane feasible, no valves needed, fixed vacuum windows (Ti 0.1 mm) will be used
- stand-alone pumping system available
- electronics (rack, PC, …) stays below the mechanical support, ACC network and machine timing to be used
- beam dump made of 3x20cm steel (same as for ASYEOS), better if “movable” -> **GLAD OFF**

Proposed setup (Feb 2025)

In parallel, transportation and preparation of FMF1DK1 is desirable, like in Dec 2023.





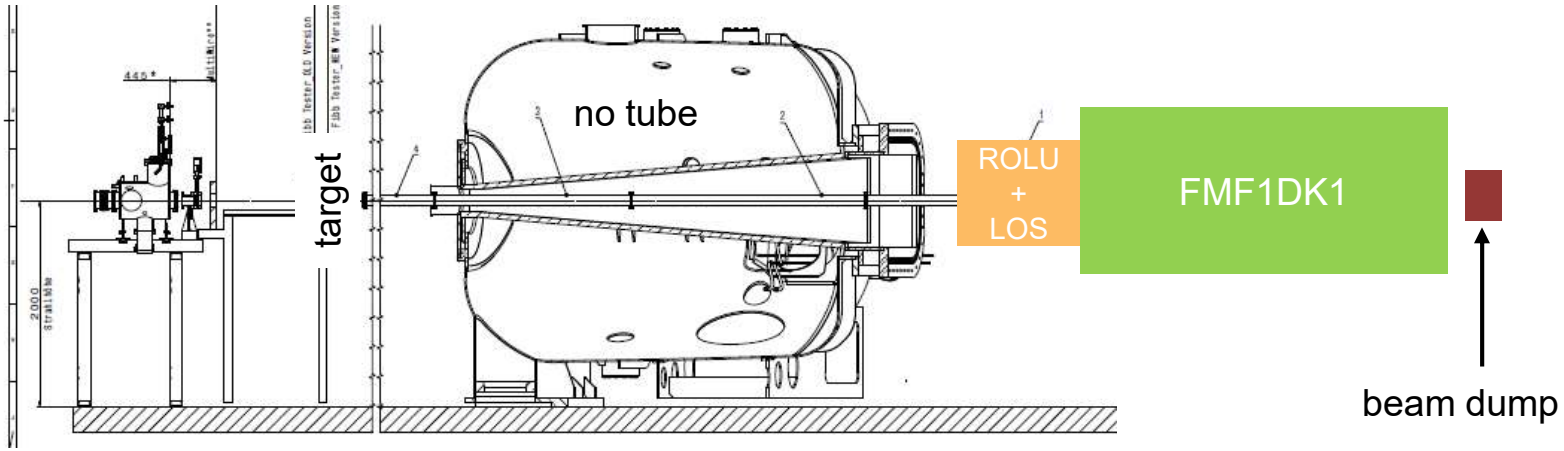
- After the IPM test, we aim for a low intensity detector test behind GLAD

  - FoS 2xSciFiber (C. Caesar et al.)
  - FoS MUSIC (B. Voss et al.)
  - FoS Plastic Scintillator (M. Czogalik et al.)

SFRS PID test

- **3-5 Jul 2025**, **U** primary beam E_{SIS}=0.5 - 1 GeV/u up to 10^7 ions/s

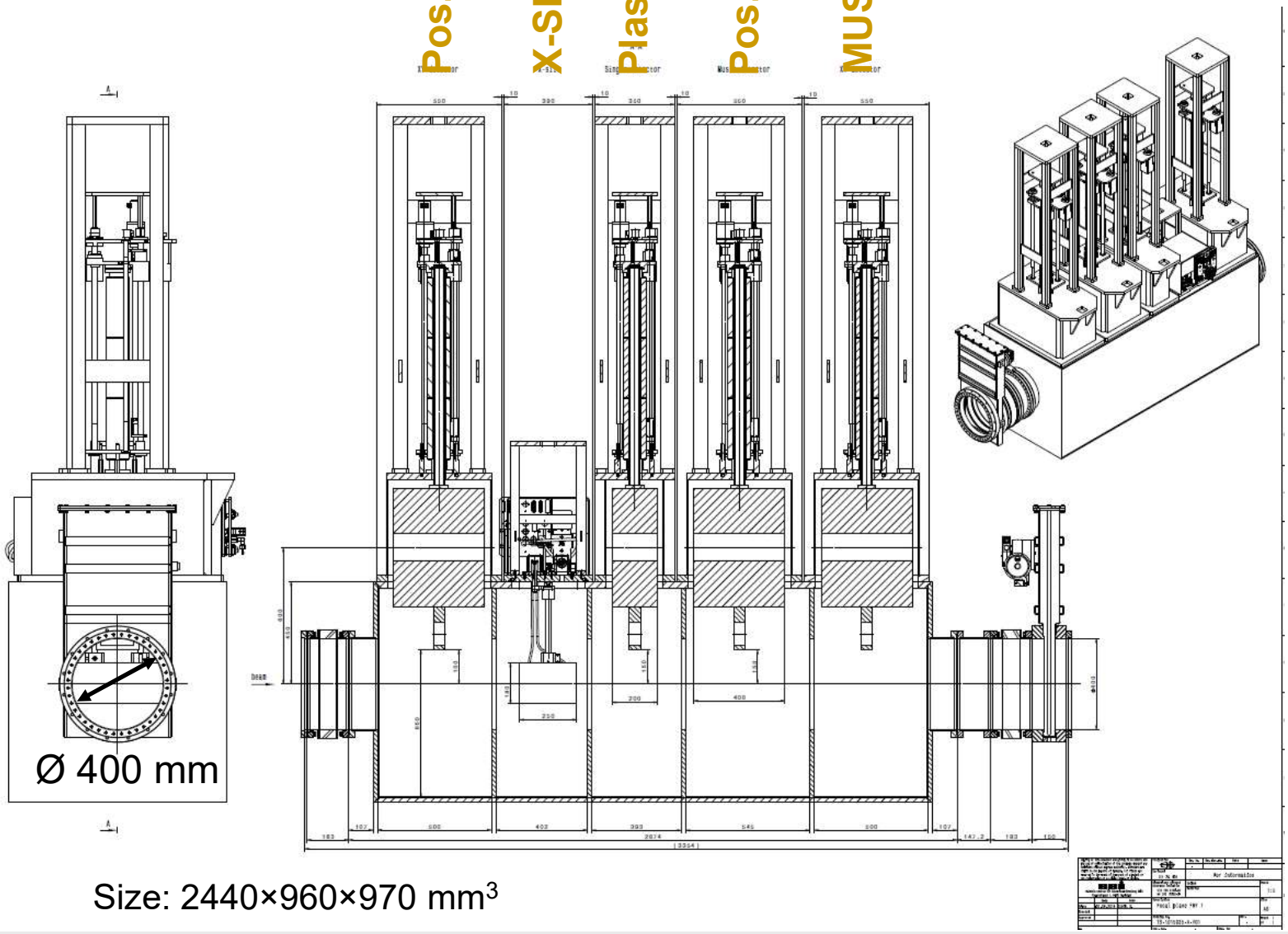
PID setup



- 3 weeks min. access to cave, entrance possible only from the lateral wall
- stand-alone pumping system available
- stand-alone DAQ
- beam dump made of 3x20cm steel (same as for ASYEOS) behind FMF1DK1
- calibration runs (3 SIS energies) - > **GLAD OFF**
- projectile-like fragments run (1 SIS energy) with target to produced - > **GLAD ON**

FMF1DK1

Vacuum interface



Size: 2440×960×970 mm^3

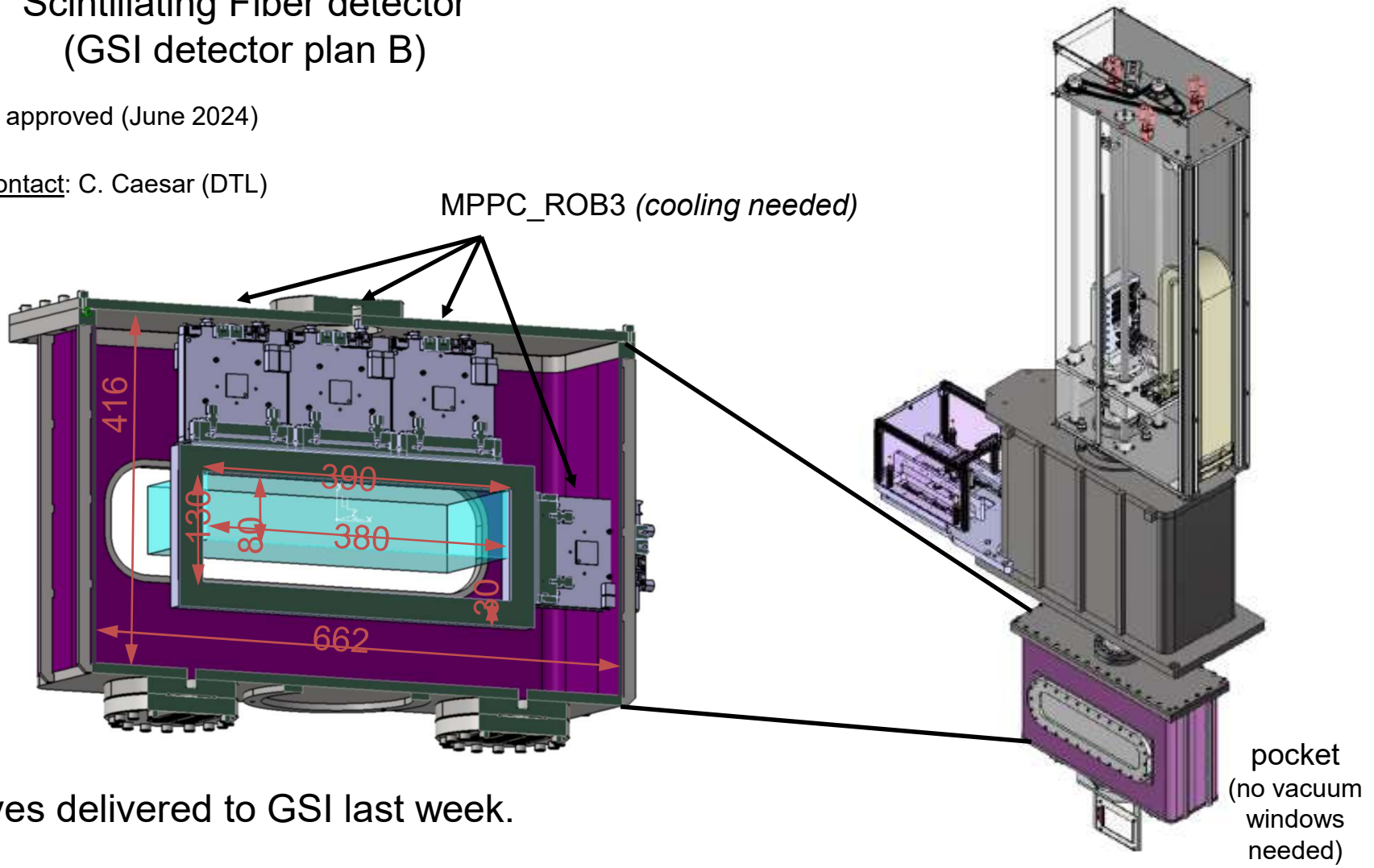
FoS Scintillating Fiber detector

- Scintillating Fiber detector (GSI detector plan B)

CDR: approved (June 2024)

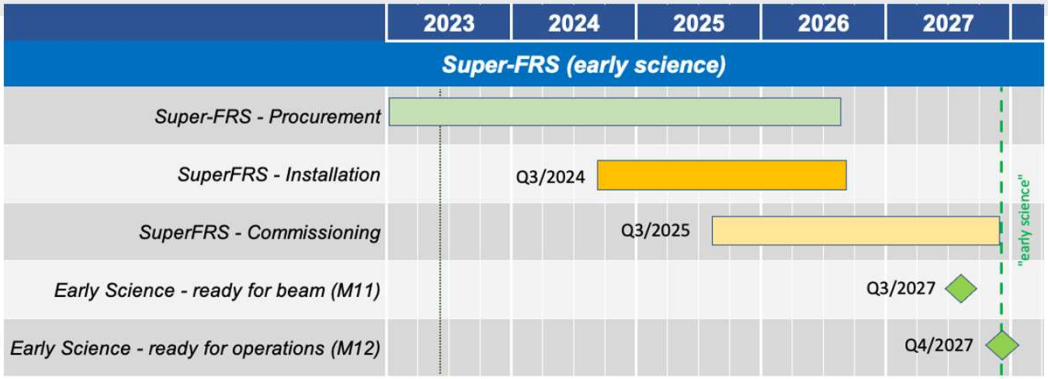
Contact: C. Caesar (DTL)

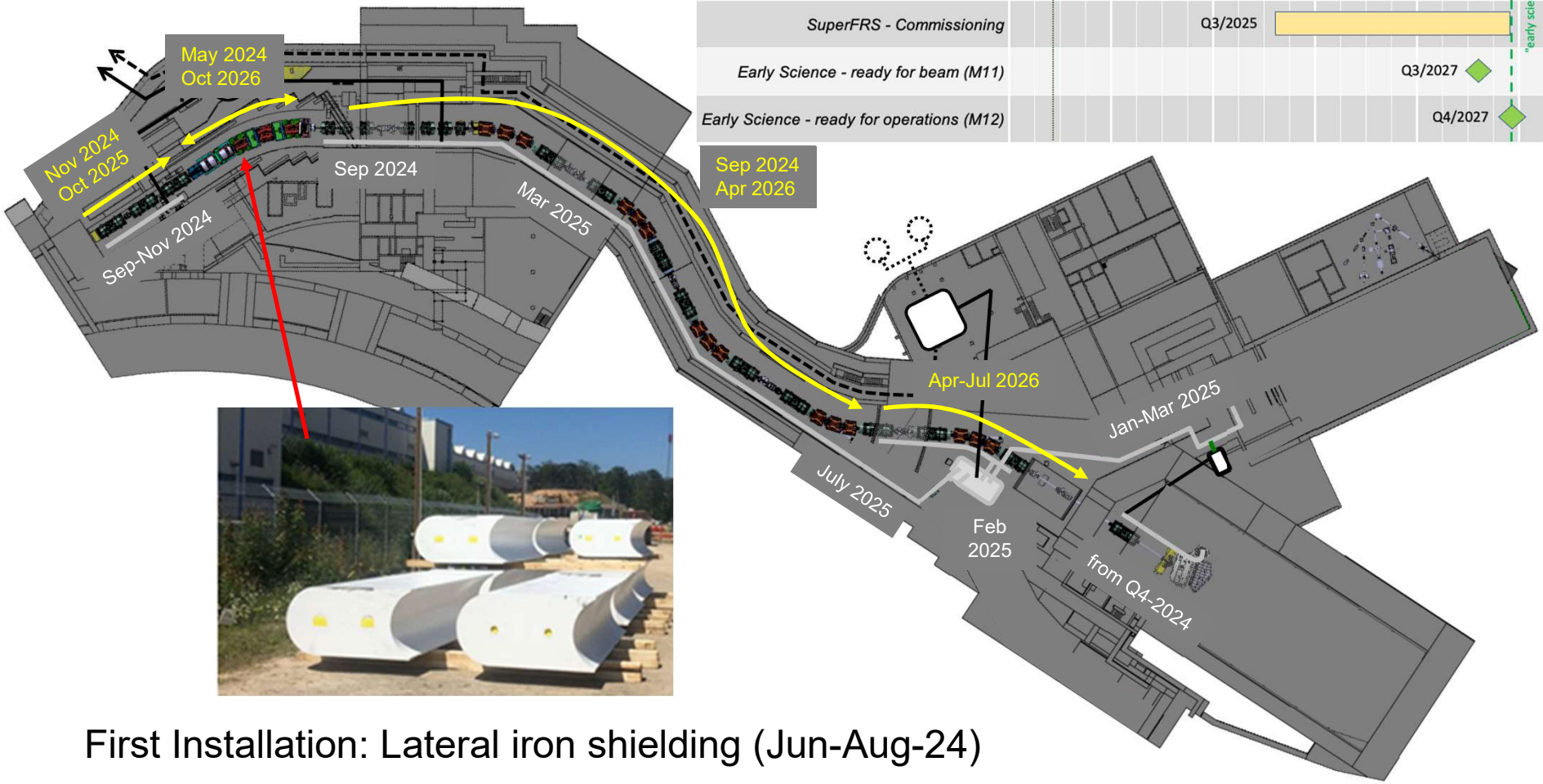
FoS 3D model by J. Tuunanen (JYU)



Drives delivered to GSI last week.

SFRS installation schedule





First Installation: Lateral iron shielding (Jun-Aug-24)

Conclusions

- According to 2025 beam time schedule (v. 5) , there are **no major collisions** between the SFRS detector tests and the scheduled R3B experiments.
- The support and contribution needed from the local R3B coll. will be kept **minimal**.
- The SFRS IPM test is our first priority in **Feb 2025**. Tests of other detectors will follow as much as possible according to their preparation and status.
- The SFRS PID test can be divided in **2 parts** (Feb and Jul 2025) compatibly with the SFRS installation schedule and the man-power available.