

CYGNO

CYGNO/INITIUM

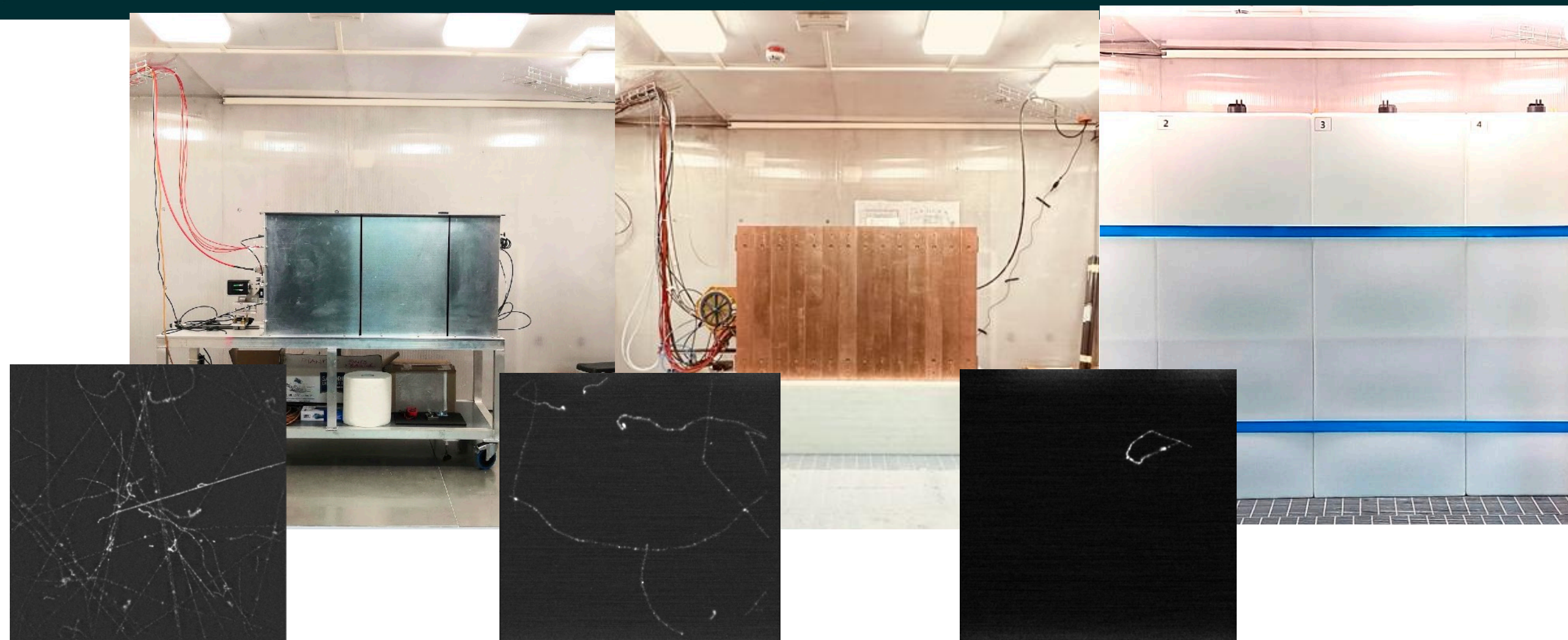
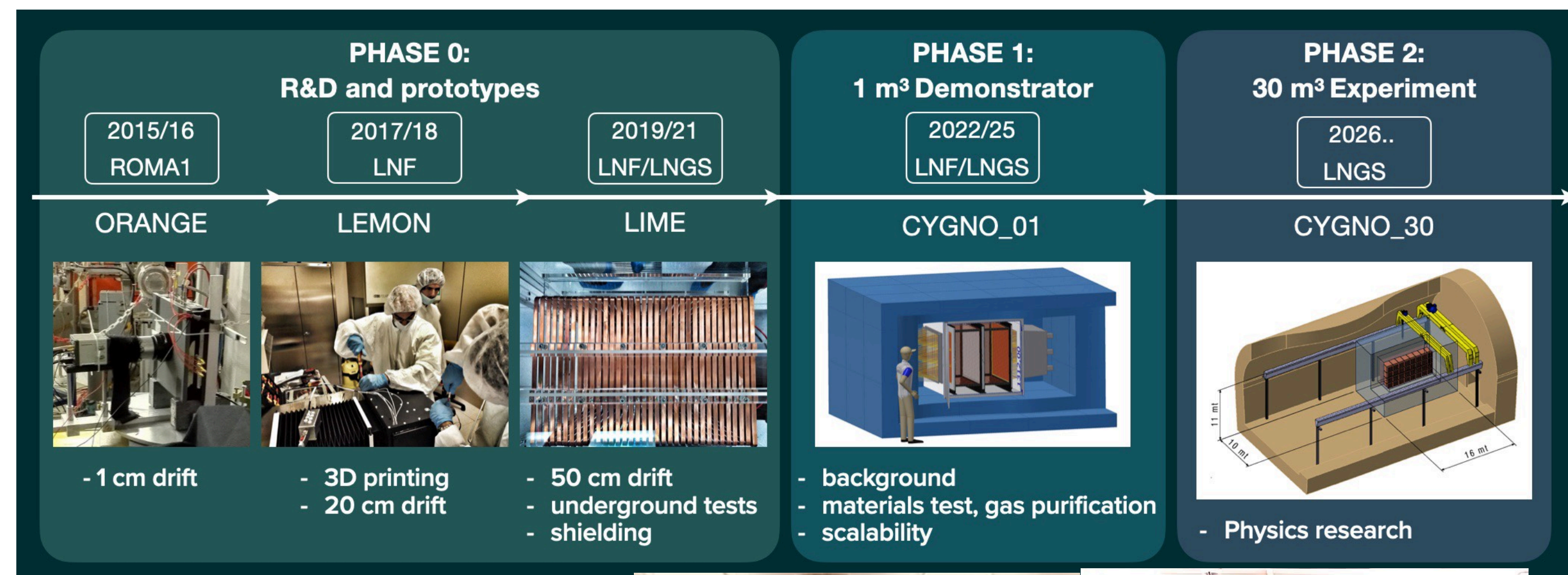
1 m³ demonstrator for directional dark matter search and solar neutrino physics

- **Risultati 2025:**

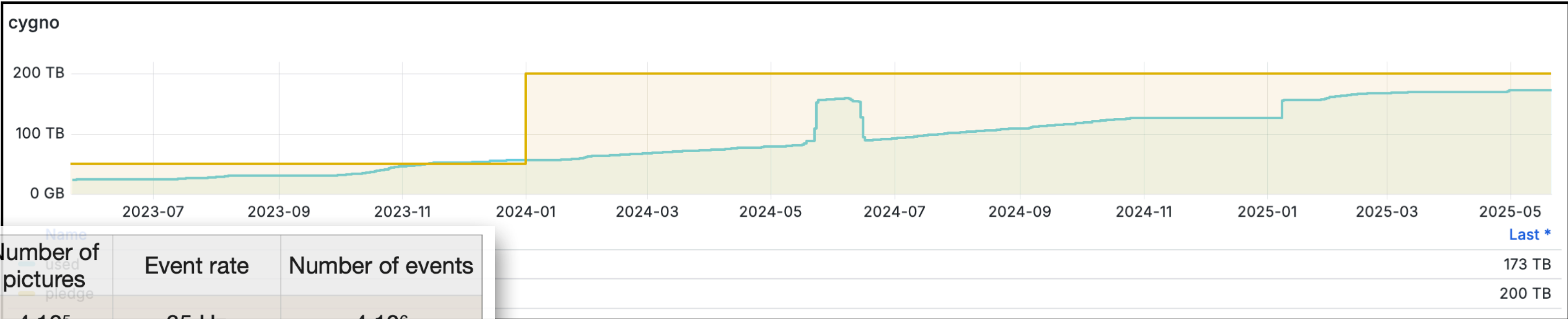
- LIME run4/5 (detector un-shielded) n-flux, NiD
- analysis/computing (PNRR)
- installation control room and services box in Hall F
- design of CYGN04 detector
- Large GEM/Cathode test and prototype/GIN prototype
- assembly of CYGN004 detector

- **Obiettivi/Milestone 2026:**

- installation of CYGN004 detector



proto runs storage/tape data flow



	Time slot	Number of pictures	Event rate	Number of events
RUN 1: No-shielding	3 Nov 2022 - 15 Dec 2022	$4 \cdot 10^5$	35 Hz	$4 \cdot 10^6$
RUN 2: 4 cm Cu shielding	15 Feb 2023 - 15 March 2023	$4.5 \cdot 10^5$	3.5 Hz	$5 \cdot 10^5$
RUN 3: 10 cm Cu shielding	5 May 2023 - 16 Nov 2023	$1.6 \cdot 10^6$	1.5 Hz	$7.3 \cdot 10^5$
RUN 4: 10 cm Cu + 40 cm water shielding	30 Nov 2023 - 31 March 2024	$2 \cdot 10^6$	1.0 Hz	$6 \cdot 10^5$
RUN 5: 10 cm Cu shielding (neutron flux measurements)	17 May 2024 - 1 Dec 2024	$12 \cdot 10^6$	1.5 Hz	$5.4 \cdot 10^6$

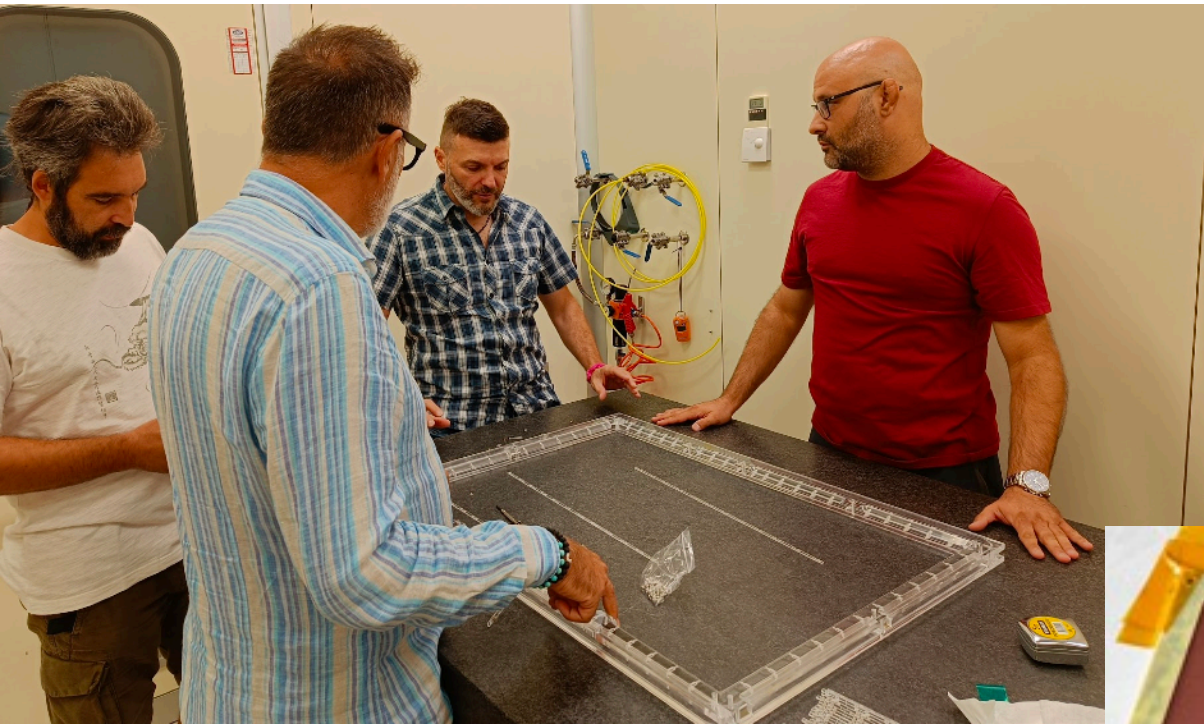
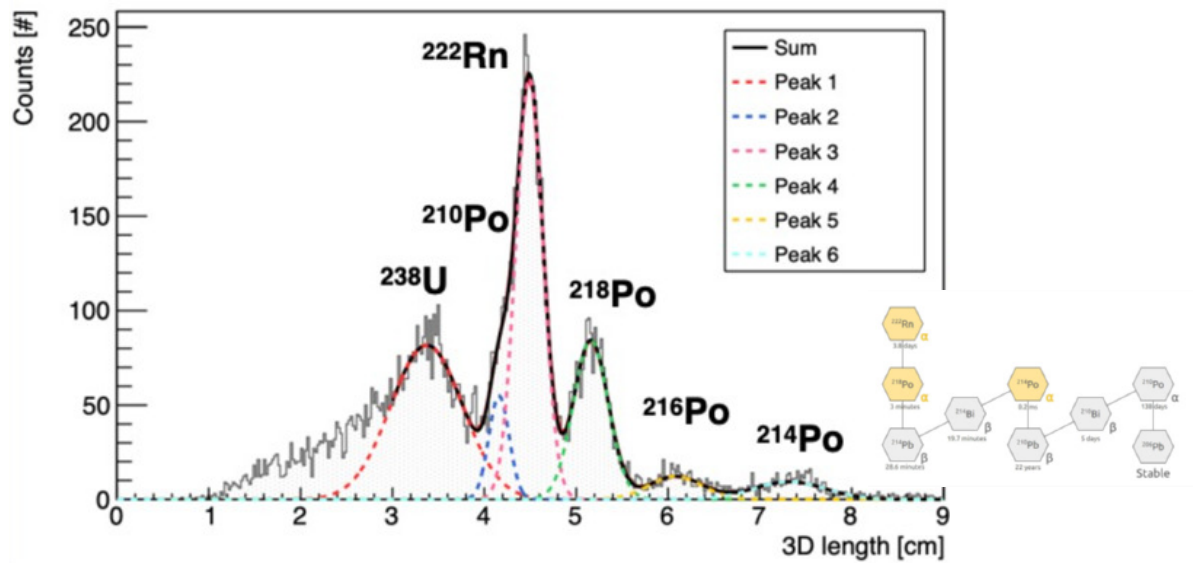
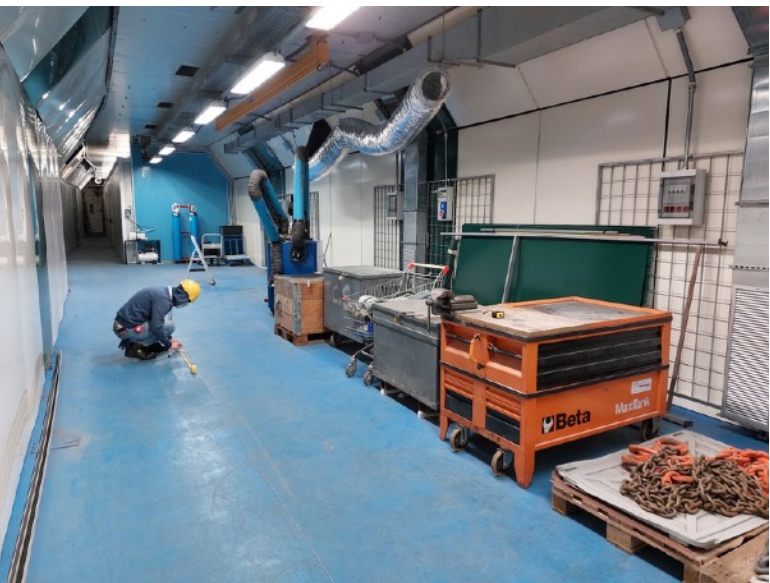
Special data takings

AmBe for Nuclear Recoils	2-4 Aug 2023	$2 \cdot 10^5$	0.04 Hz of NR	$2.5 \cdot 10^3$ NR
^{241}Am for Electron Recoils	7-16 Nov 2023	$7 \cdot 10^5$	50 Hz	10^6
AmBe for Nuclear Recoils	5-15 Dec 2024	$6 \cdot 10^5$	0.04 Hz of NR	$7.0 \cdot 10^3$ NR

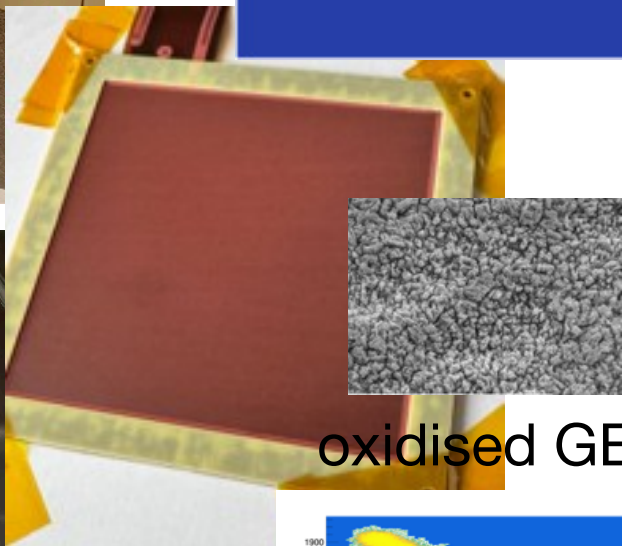
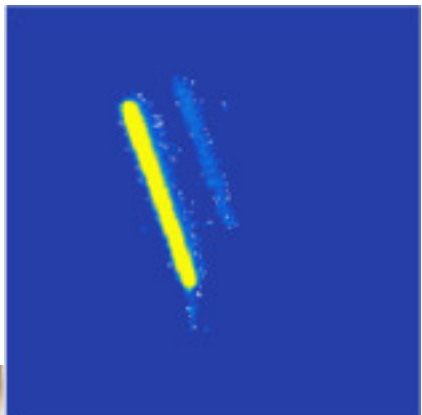


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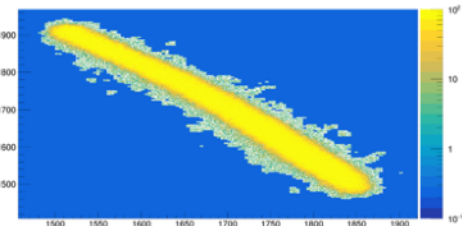
detector components validation; infrastructure and detector construction



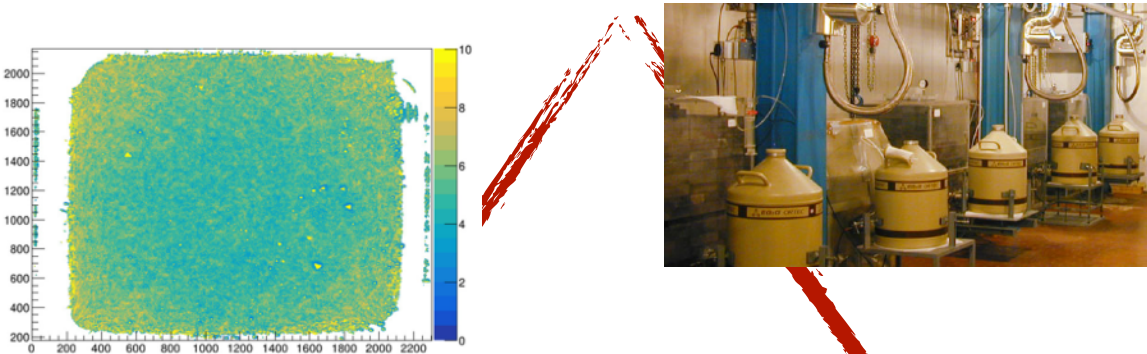
GEM mirroring image



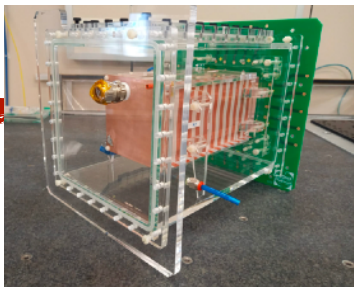
oxidised GEM



radio purity



electrical properties



mechanical properties

Cesidio Capoccia (R)
Servizio Meccanica
Attività primo semestre 2025

CYGNO EXPERIMENT

CYGNO 0.4 DETECTOR

L'infrastruttura in sala "F" è stata installata tra il mese di Febbraio e Marzo 2025

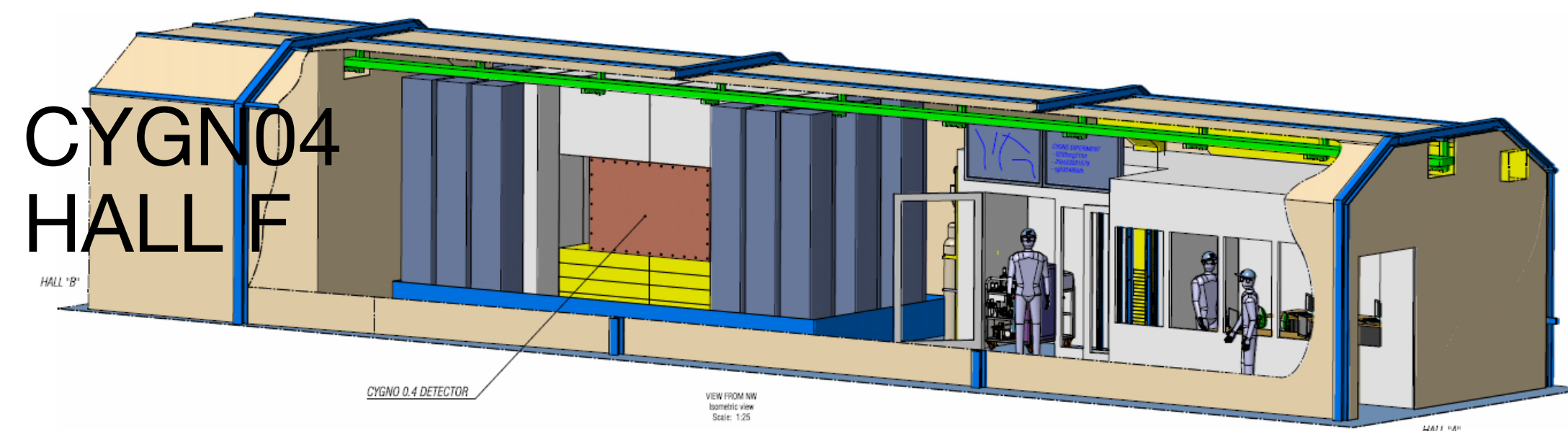


Durante la messa in opera, gli incaricati che hanno seguito i lavori, hanno cambiato il posizionamento della struttura rispetto al progetto originale a discapito dello spazio di passaggio. Sono in corso verifiche da parte dei LNGS per risolvere o comunque minimizzare il problema.

CLF Giugno 2025 - Cesidio.Capoccia@inf.infn.it

CYGNO/INITIUM 2025

CYGNO @ LNF



- **FTE (3.4):** L. Benussi (10%), S. Bianco (10%), G. Dho (50%), M. Caponero (20%), G. Maccarrone (20%), G. Mazzitelli (20), G. Saviano (10%), S. Tomassini (20%) - 1.6 FTE (dot/lau D. Tozzi, A. Biondi, F. Scampolino)
C. Capoccia, A. Croce, E. Paoletti, P. Pierluigi, A. Russo, R. Tesauo.
Total ~ 20 FTE 51 autori

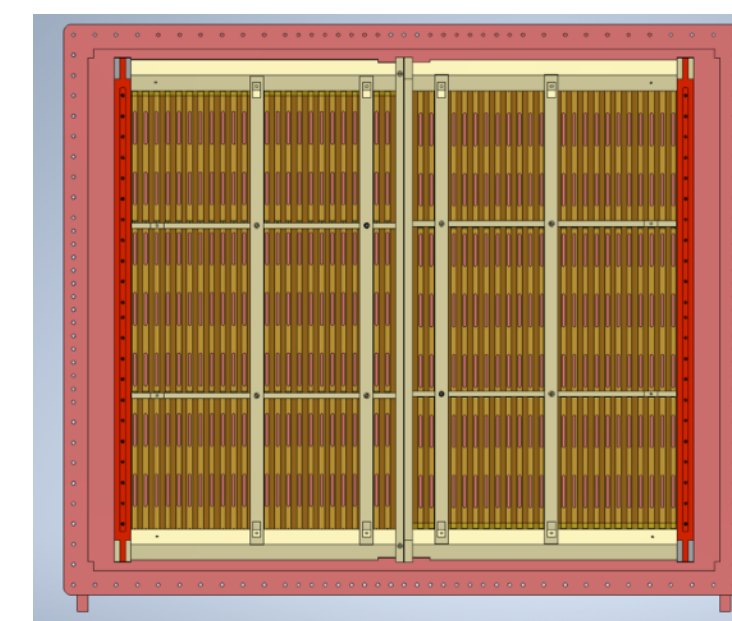
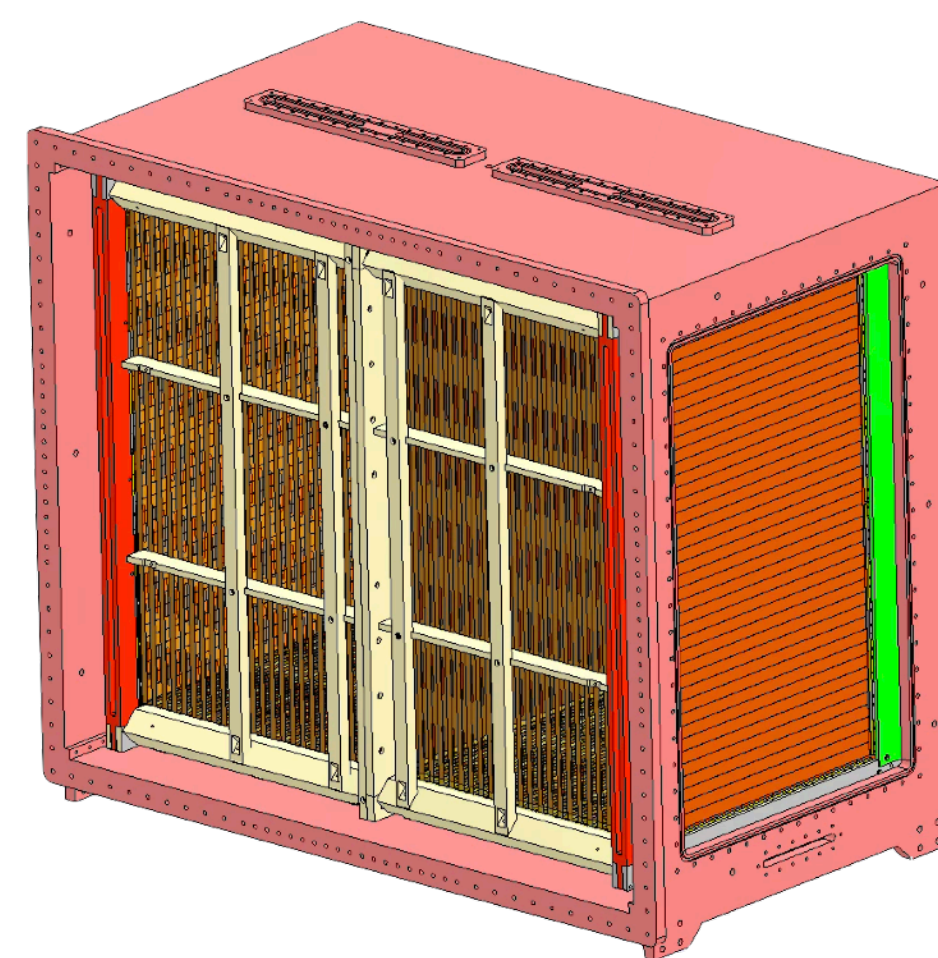
- **Attività a carico LNF (LNGS):**

- coordinamento e progettazione degli apparati.
- coordinamento, costruzione e test degli apparati
- coordinamento e sviluppo del readout elettronico
- coordinamento e test materiali/gas
- coordinamento e sviluppo analisi
- coordinamento e sviluppo computing

- **Richieste CSNII 2024:** costruzione LNGS e turni 22ke, consumo 30ke (gas/gem bassa radioattività/sistema di calibrazione)

- **Richieste LNF 2024:** Servizio Meccanica DR (12mu) + Servizio Meccanica (2 mu) + stampa 3d + supporto dei tecnici servizio rivelatori (12mu installation, shift)

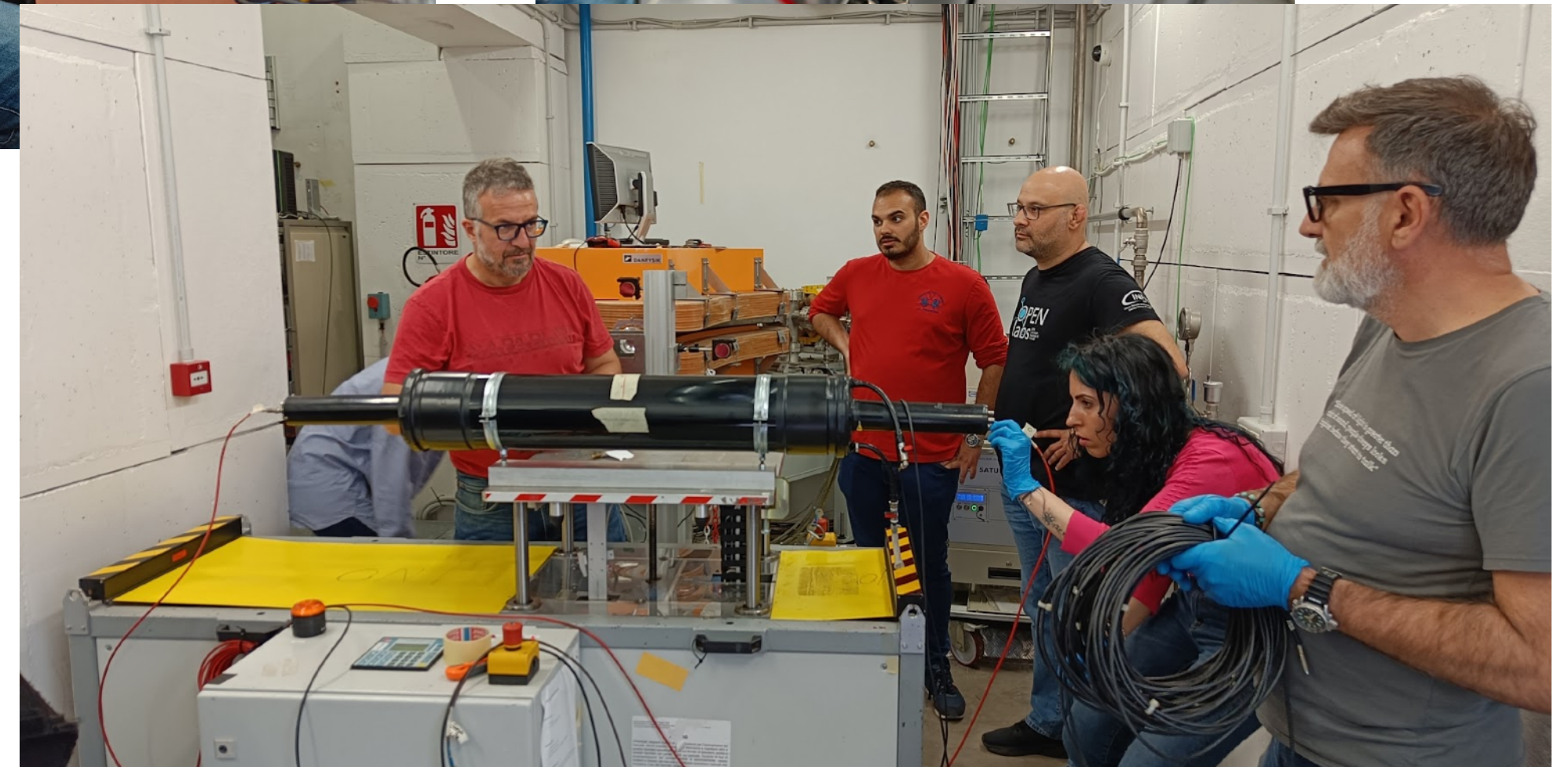
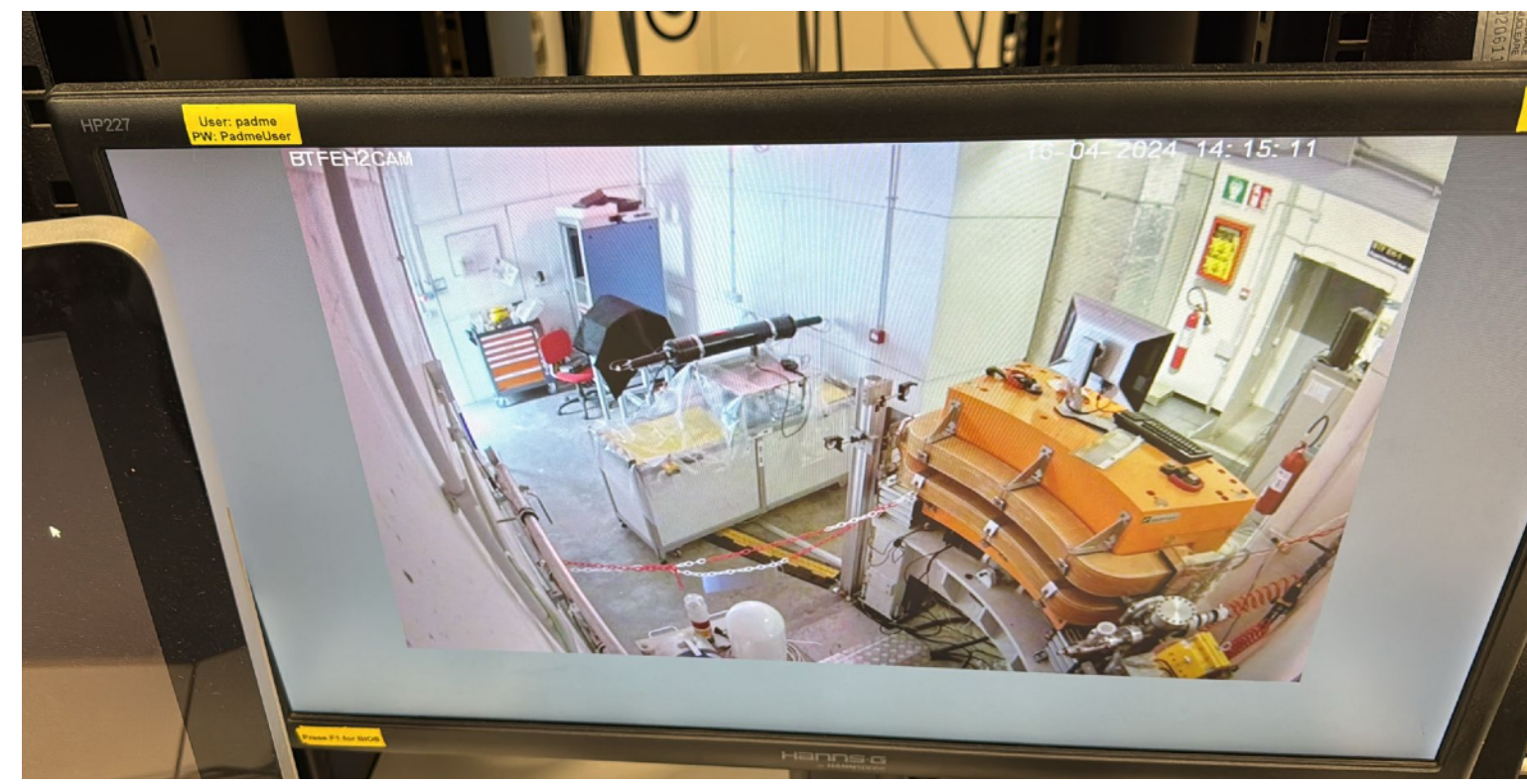
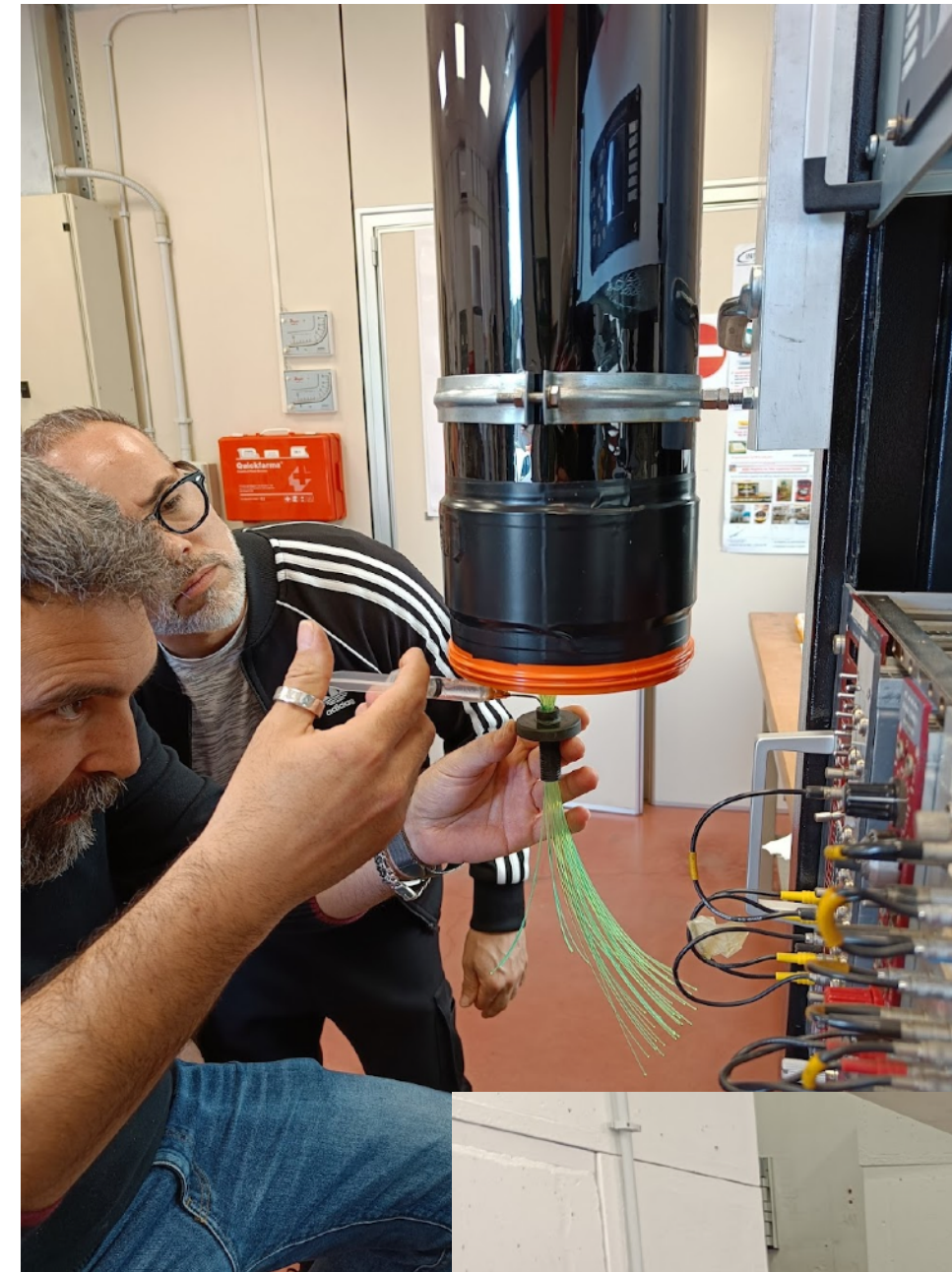
- **Fondi Esterni:** -



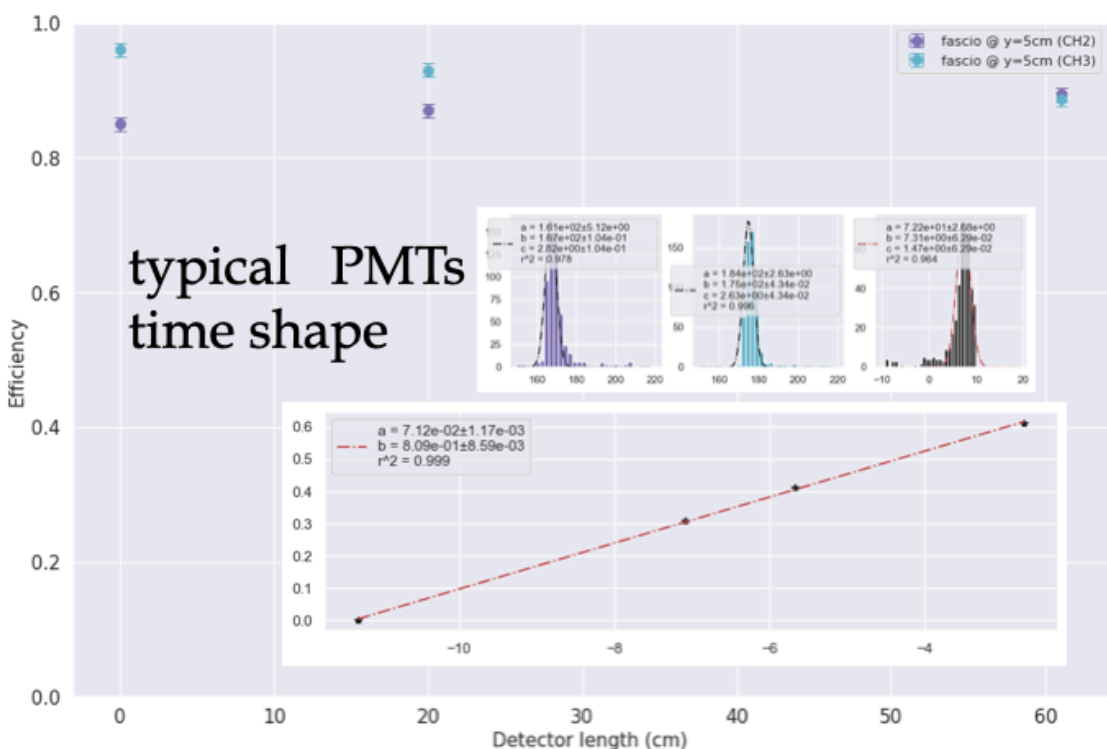
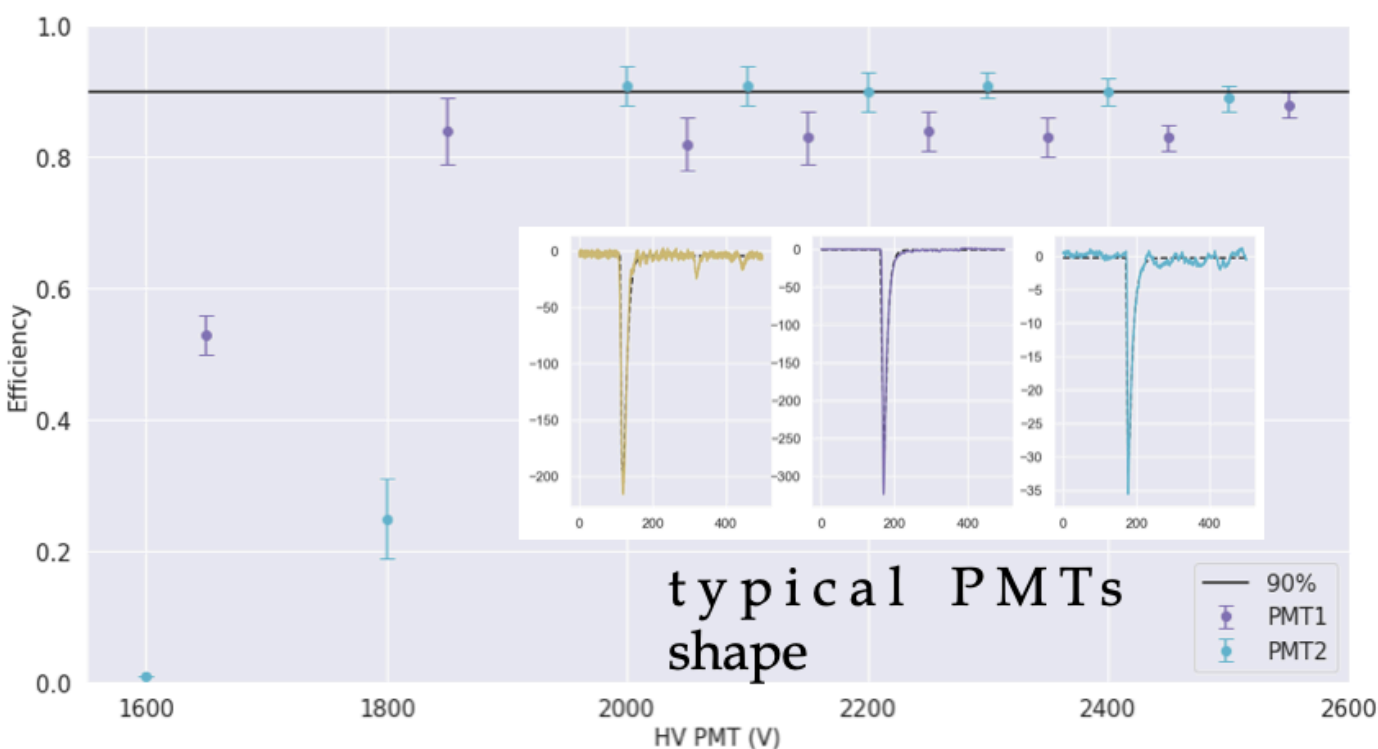
WC

L. Benussi, G. Galli (MiB), G. Mazzitelli, D. Pierluigi, E. Paoletti, A. Russo, I. Sarra, R. Tesauero, D. Tozzi (RM1)

prototype v0/v1



next step prototype v2

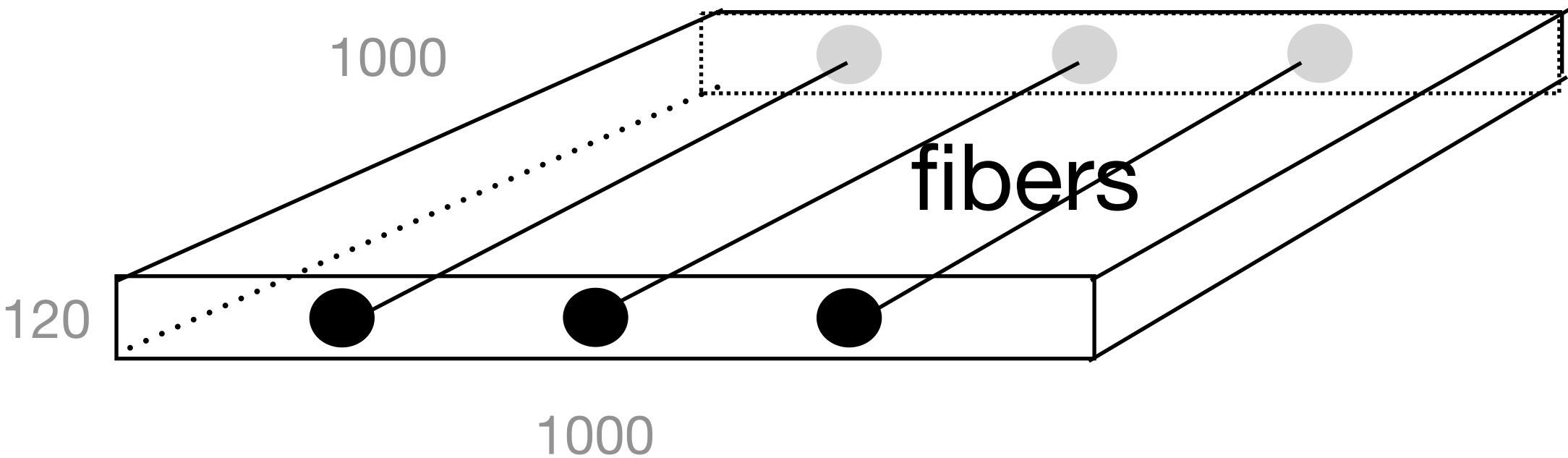
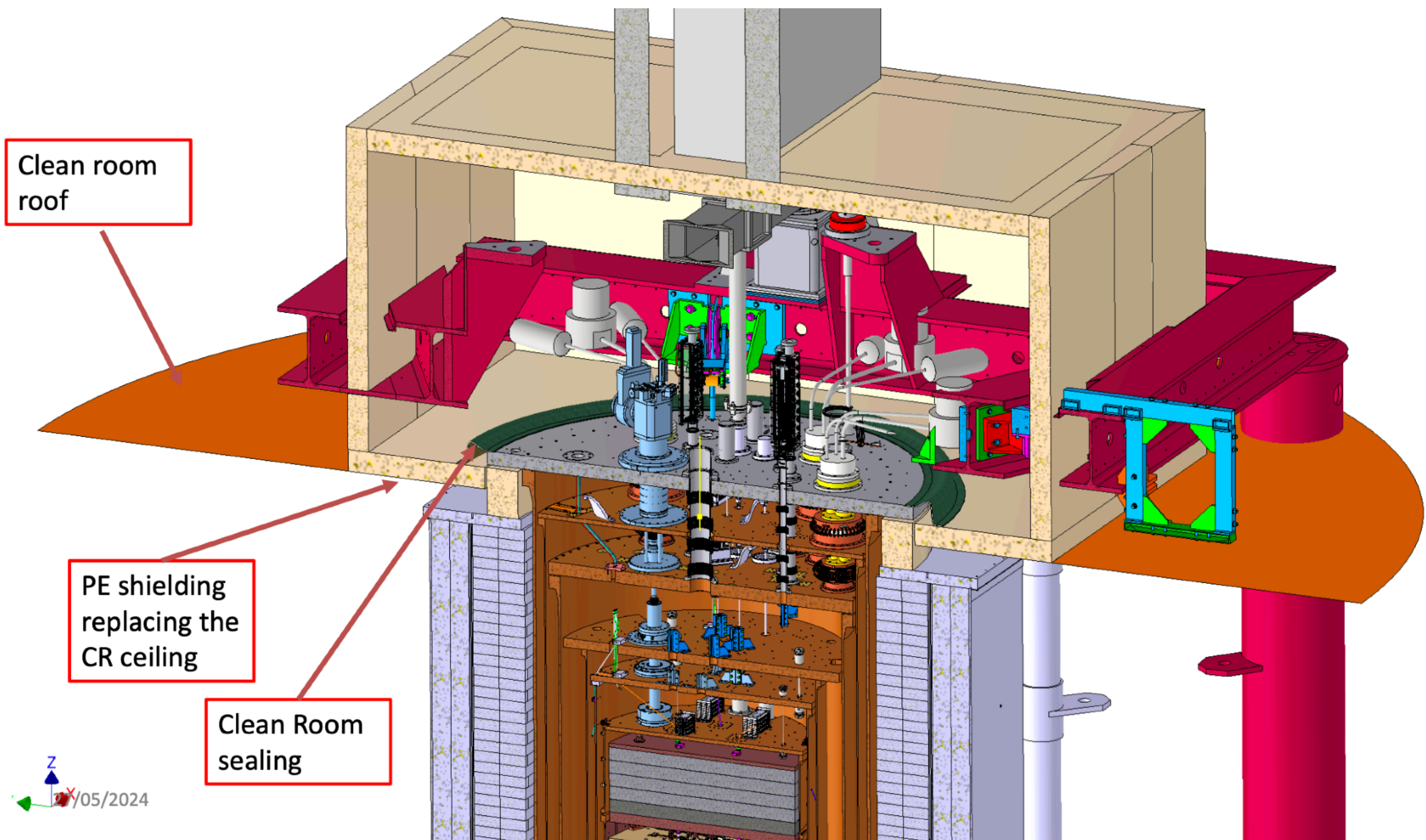


poster presented at CUPID collaboration meeting may 24 by D. Tozzi



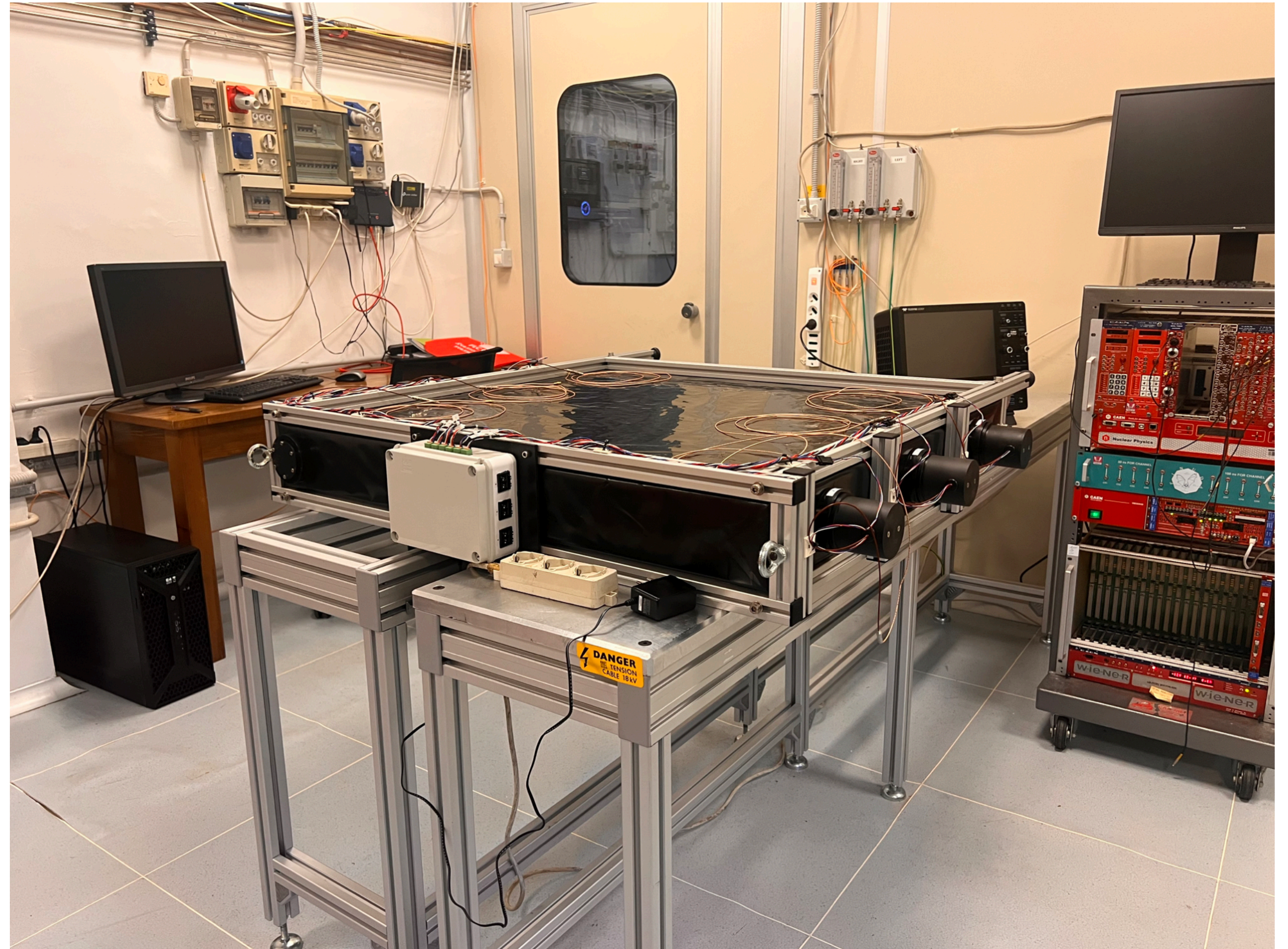
prototype v2

PMTs



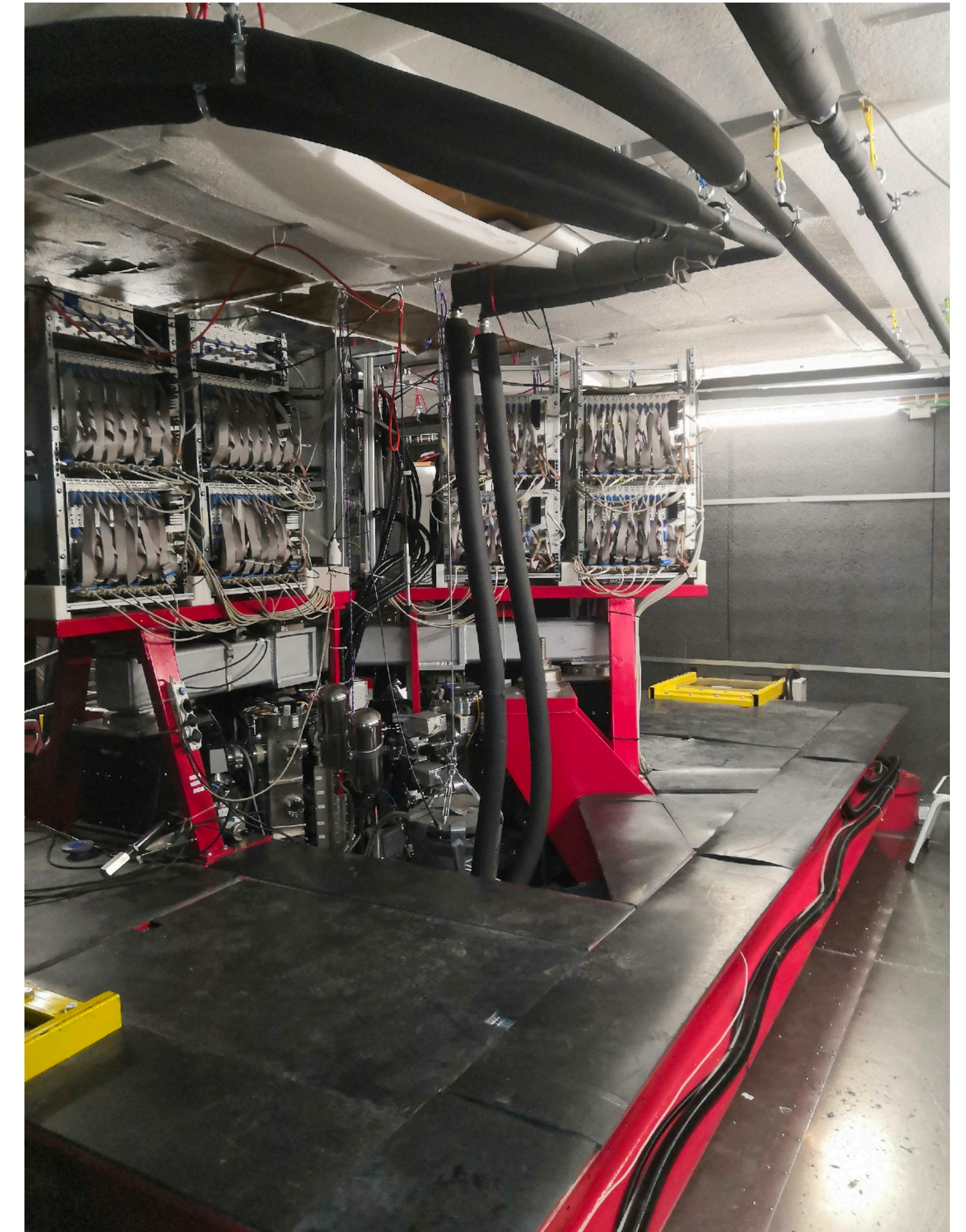
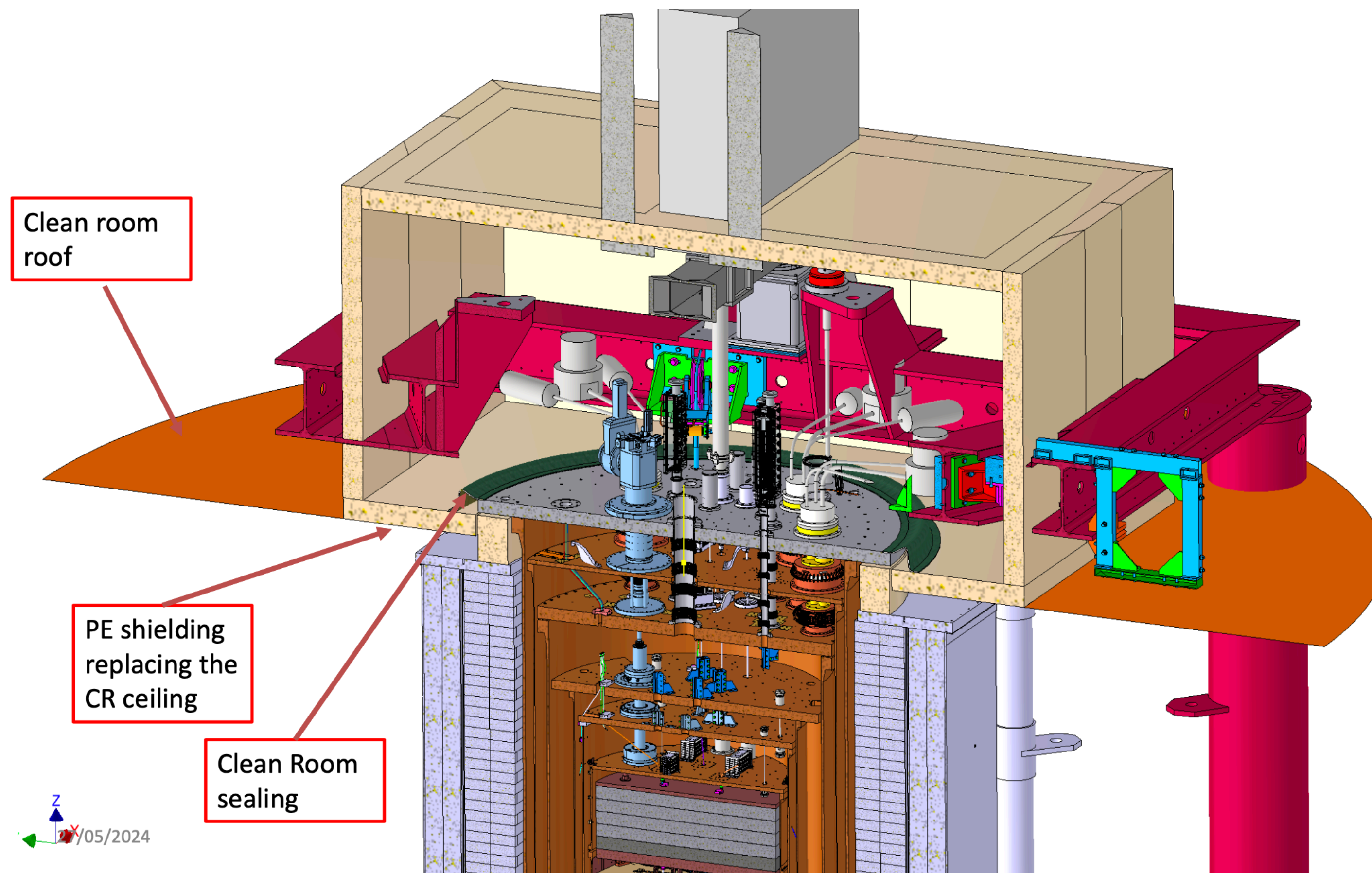
test beam Nov. 24

v2 under test

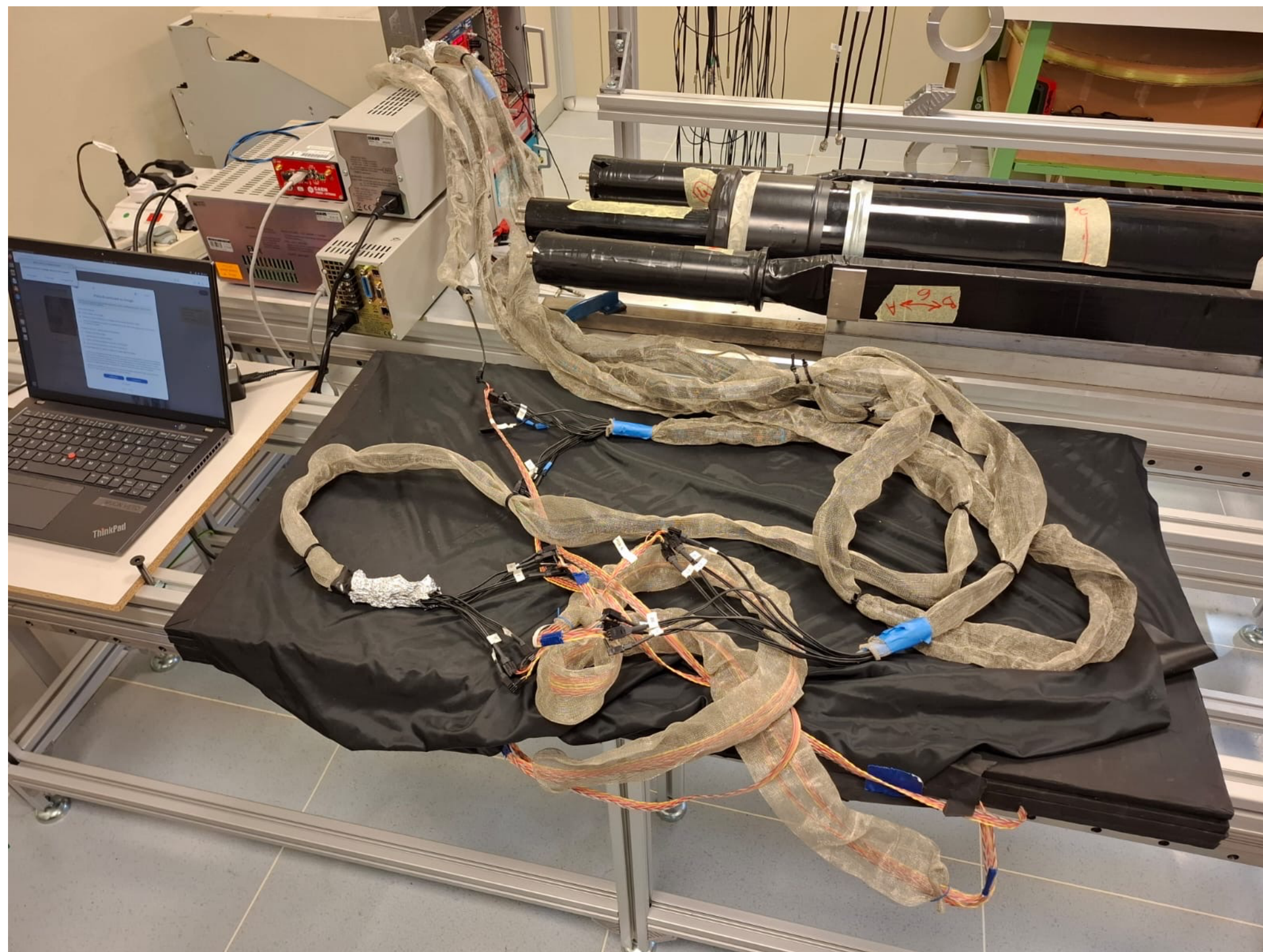


test beam in Nov/Dec @ BTF

next step prototype v3



refurbishing US MV scintillator tails



before



after