

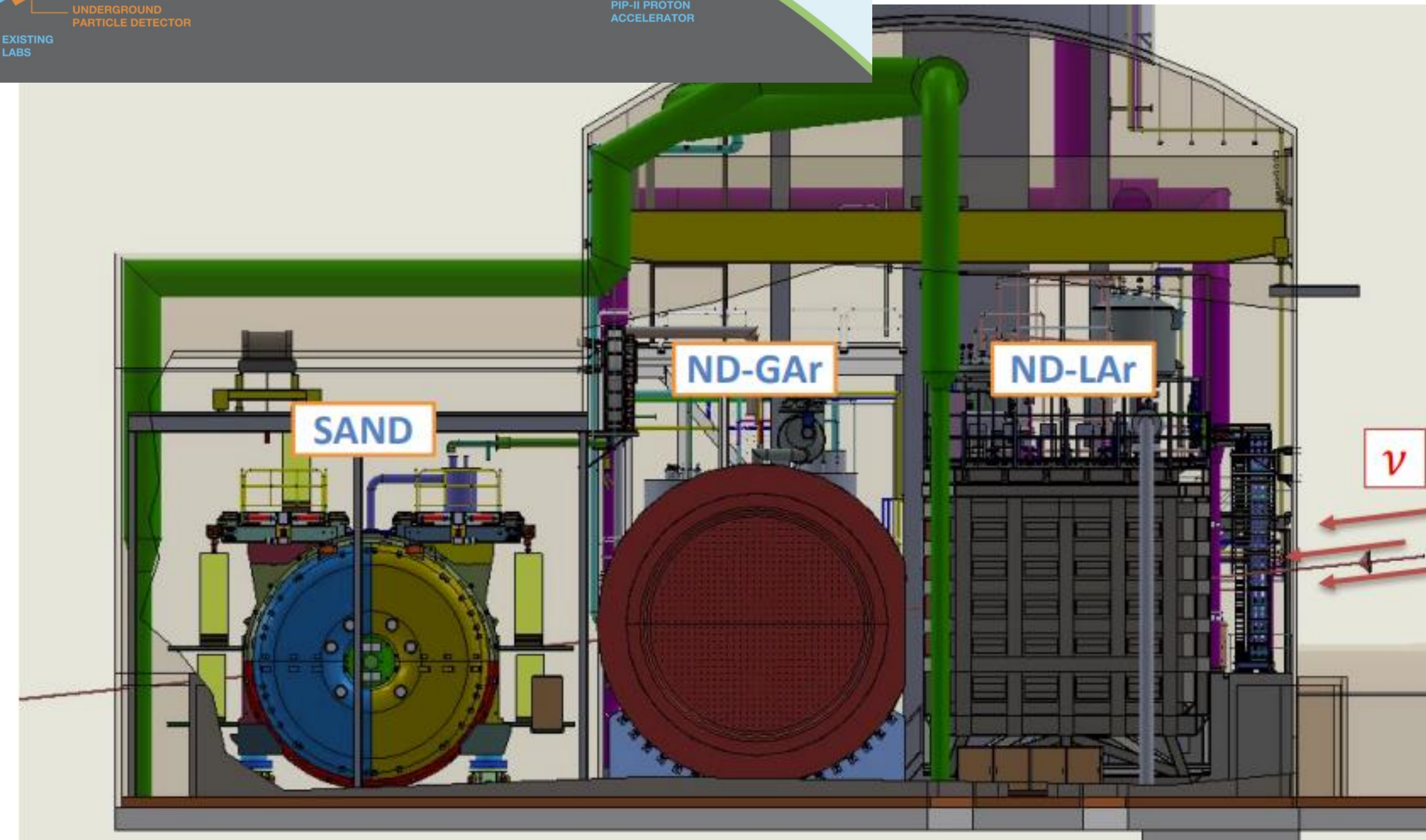
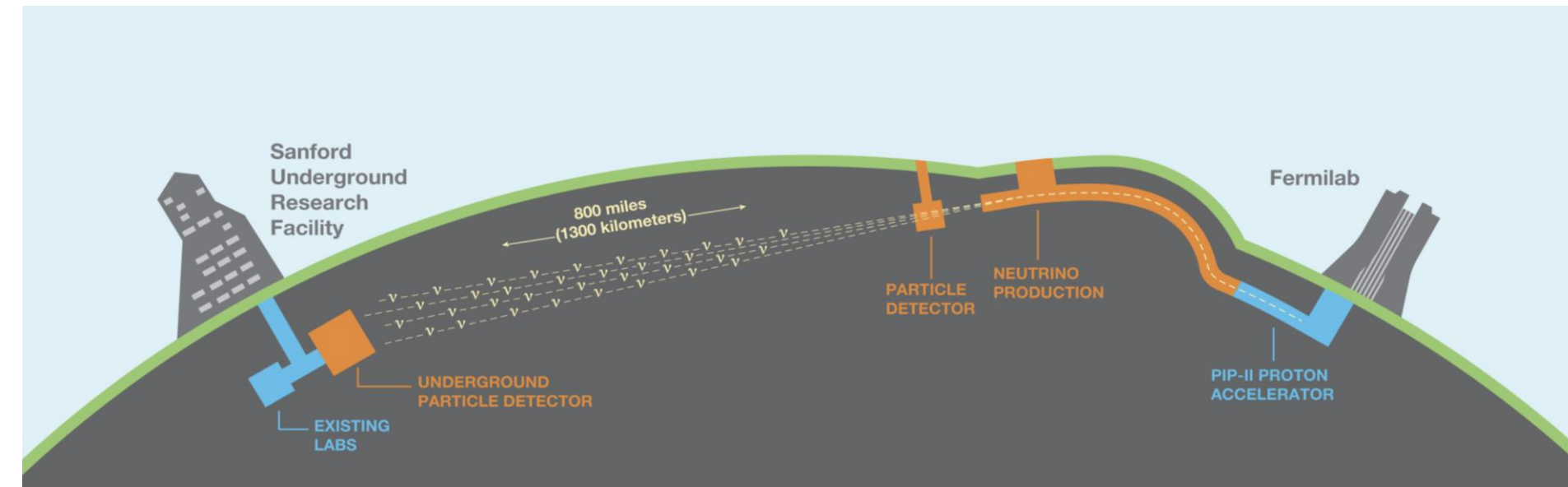
# NU\_AT\_FNAL (DUNE)

INFN (BO, CT, FE, GE, LE, LNL, LNS, MI, MIB, NA, PD, RM1, LNF) +200 istituti in +30 paesi



Studio di oscillazioni di neutrini con fascio a FNAL Long Baseline Neutrino Facility  
DUNE: Far Detector + Near Detector (SAND → KLOE ECAL/Magnet/Yoke)

- **Risultati 2023:**
  - Trasporto e stoccaggio DC
  - Realizzazione/preparazione tools smontaggio/stoccaggio ECAL
  - Definizione test criogenico magnete
  - Definizione acquisto new PS/Control Sys
- **Obiettivi/Milestone 2024:**
  - Smontaggio ECAL (Barrell+EndCaps)
  - Test magnete (new PS/Control System)
  - Preparazione smontaggio yoke
  - Preparazione logistica per trasporto



# SAND – System for on-Axis Neutrino Detection

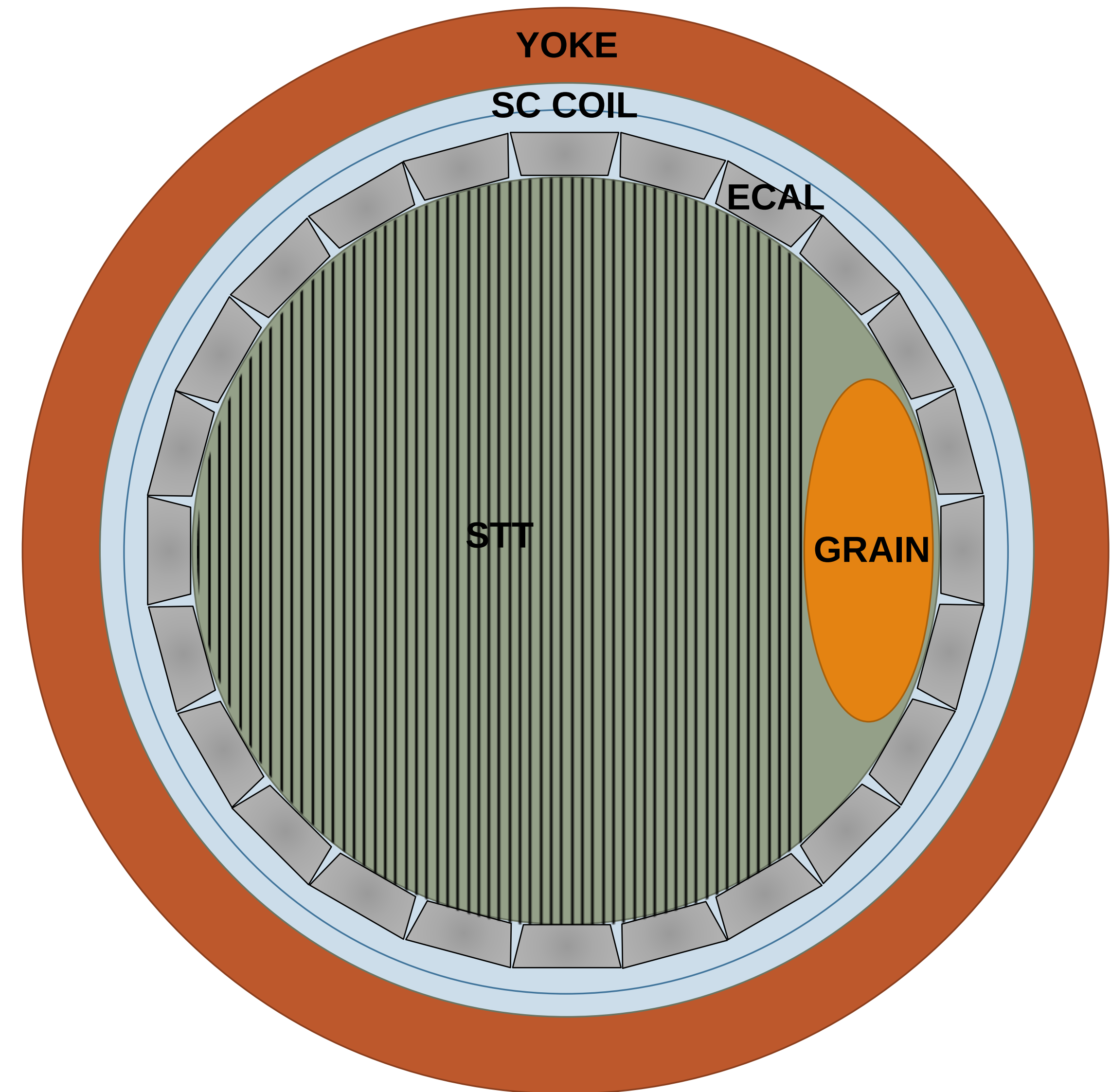
Multipurpose detector  
high performance ECAL, light-targeted tracker,  
LAr target, all in magnetic field, always on beam axis

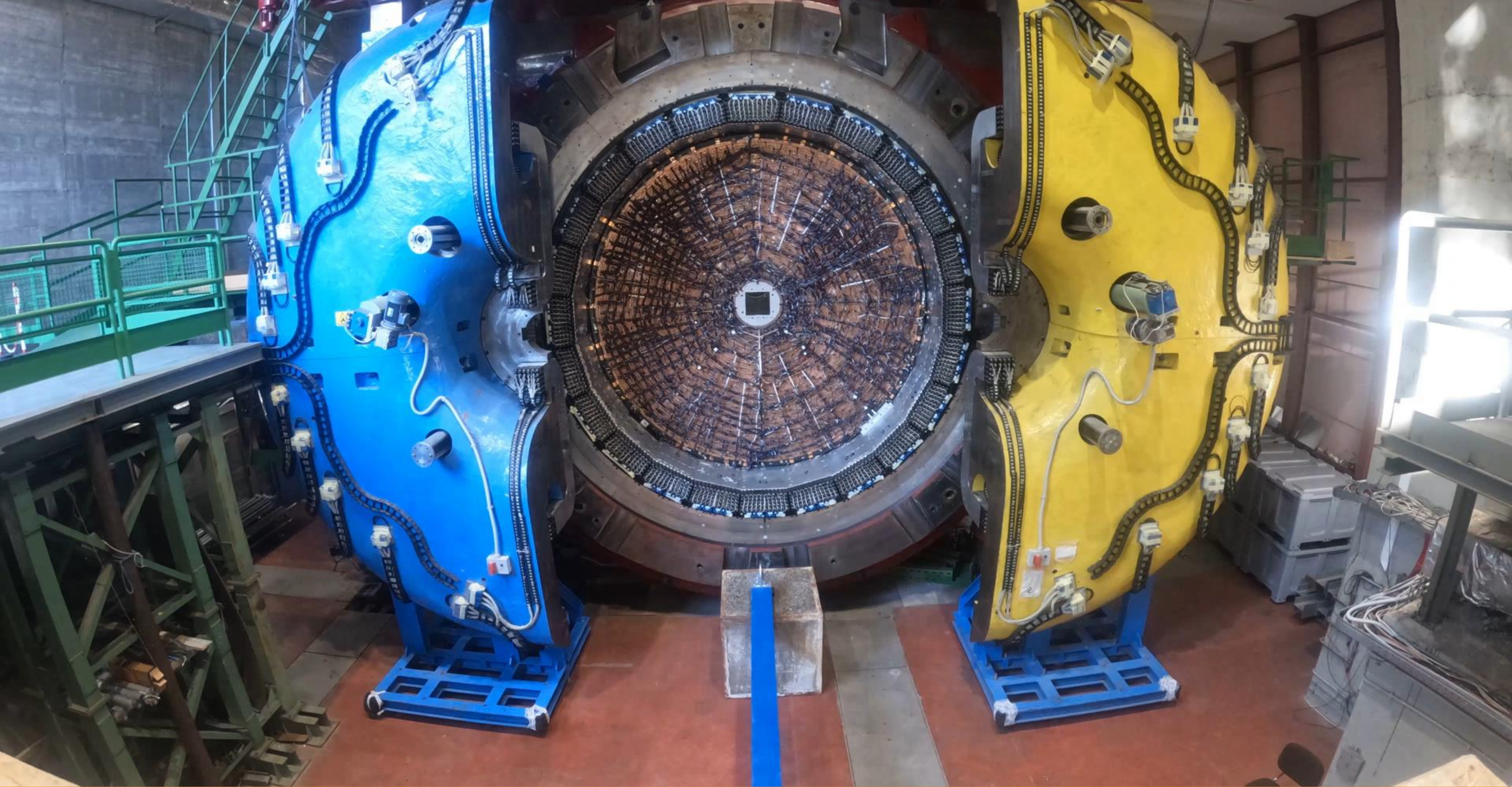
**GRAIN** – 1 ton liquid Argon target with VUV imaging system (fully optical read-out)

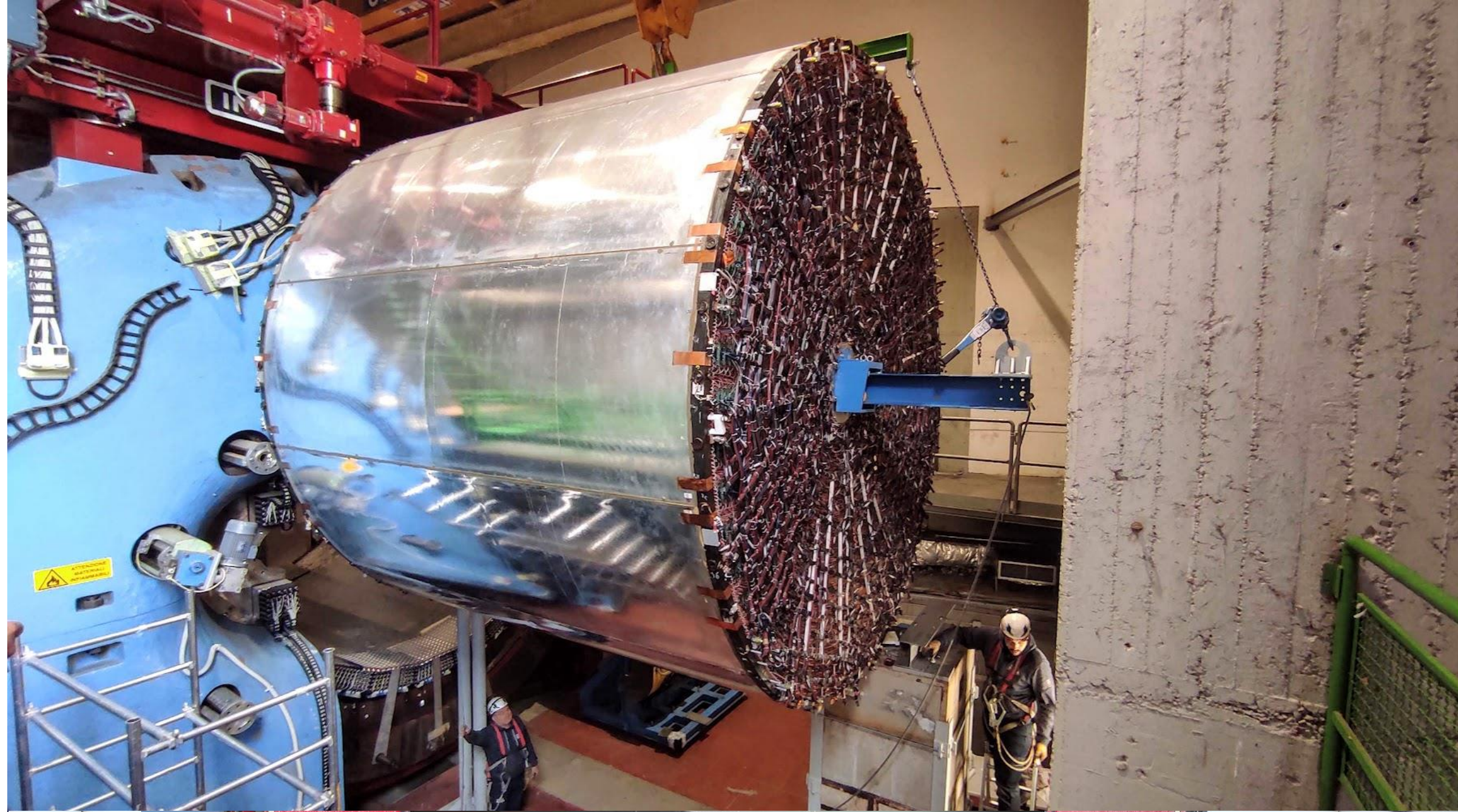
**STT** – 5 ton Straw-Tube tracker with “solid-H” target  $\text{CH}_2$  and C interleaved slabs

**ECAL** - KLOE Lead Scintillating Fibers calorimeter (Barrell + EndCaps)

**MAGNET** – KLOE 0.6T superconductive coil + Fe Yoke







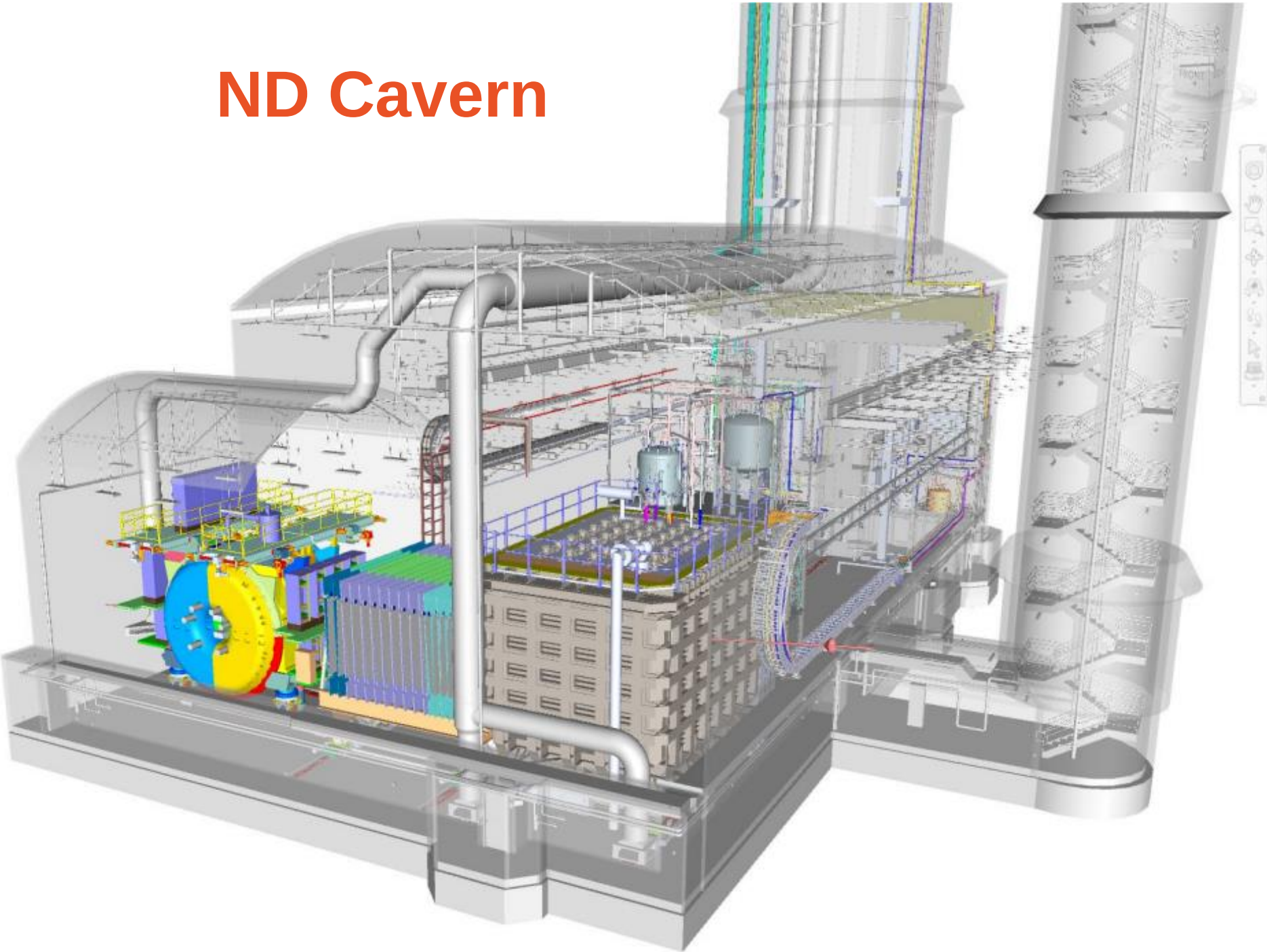


# KLOE-TO SAND Project Time Schedule

|                                        | 2022 |     |     |     |     |     |     |     | 2023 |     |     |     |     |     |     |     |     |     |     |     | 2024 |     |     |     |     |     |     |     |     |     |     |     | 2025 |     |     |     |
|----------------------------------------|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|
|                                        | May  | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan  | Feb | Mar | Apr |
| Safety Operation Documentation         |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| KLOE Hall Housekeeping                 |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Unplugging and Cables removal          |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| DC Tooling Draw and Construction       |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Drift Chamber Extraction               |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| ECAL Tooling Preparation               |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| ECAL Barrell Extraction                |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| ECAL Module Test                       |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| ECAL EndCaps Tooling Preparation       |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| ECAL EndCaps Dismounting               |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Coil PS and Cryo interface procurement |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Coil PS Intallation                    |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Coil Test                              |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Coil Tooling Preparation               |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Coil Extraction                        |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Yoke Dismounting                       |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |
| Shipping to Fermilab                   |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |

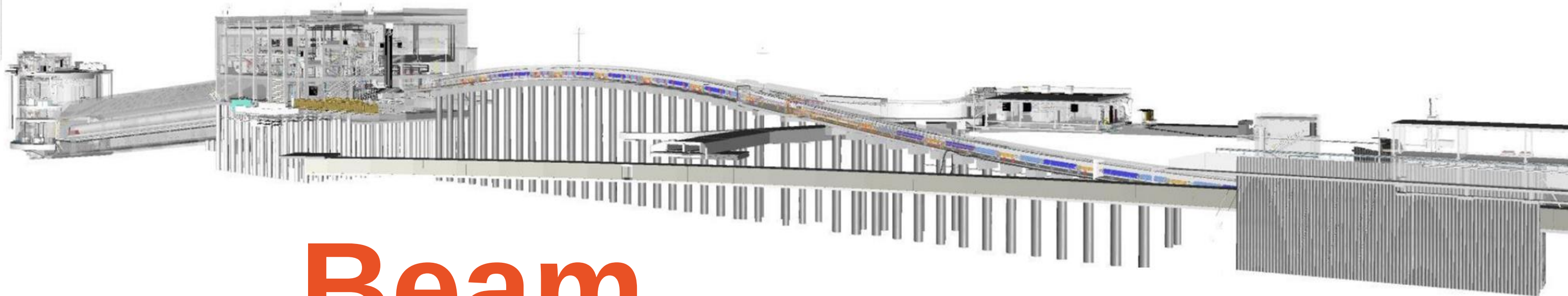
DUNE planned start: January 2031

ND Cavern



New Proton **Beam Line**

South Dakota Cavern



ND excavation



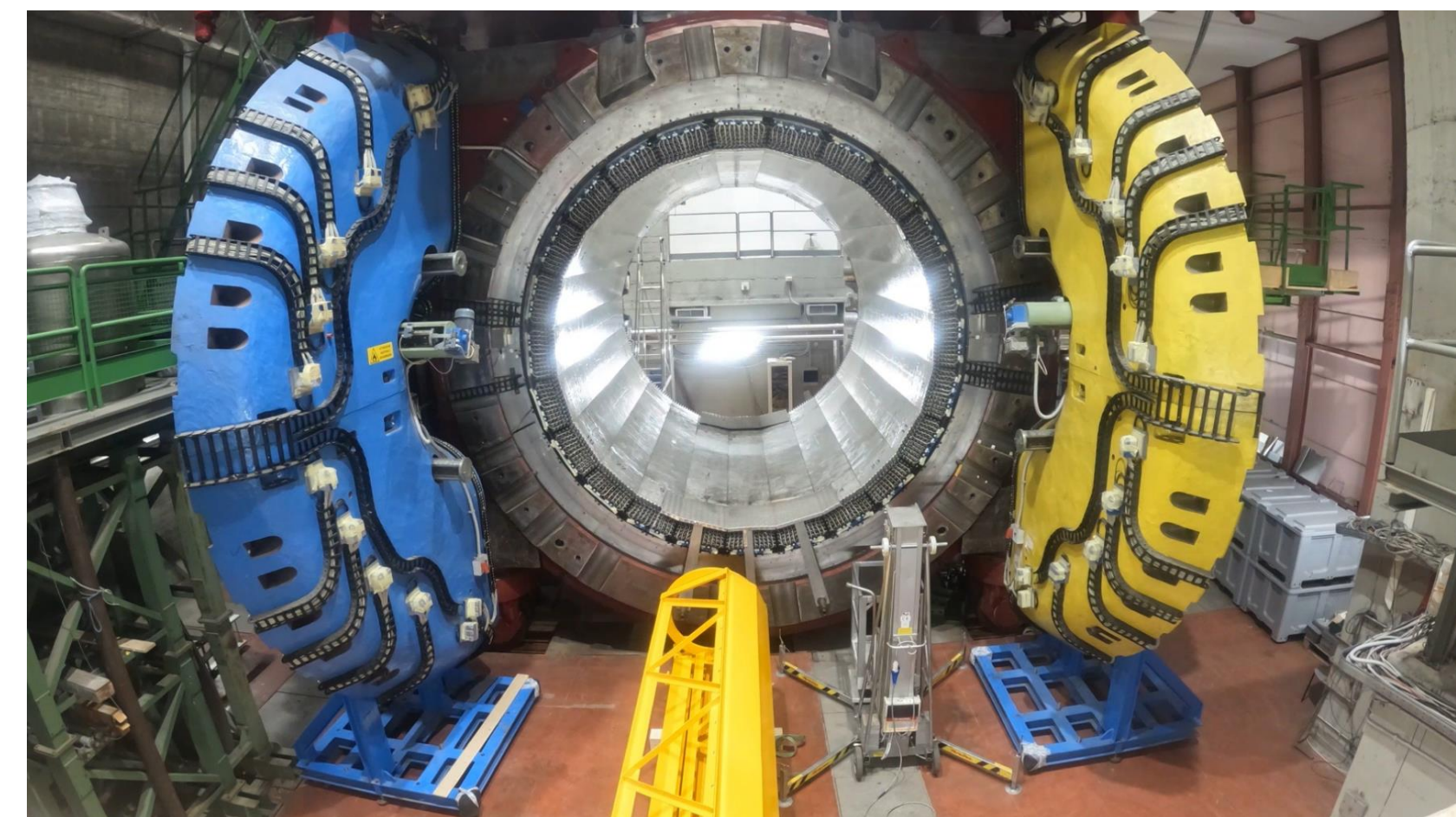
# NU\_AT\_FNAL (DUNE)

DEEP UNDERGROUND  
NEUTRINO EXPERIMENT

- **FTE 2023 (tentative):** D. Domenici (40% resp. loc.), S. Gazzana (60%), G. Delle Monache (>20%), A. Vannozzi (10%), M. Iliescu (>30%), L. Benussi (10%), S. Giovannella (10%), S. Miscetti (10%), F. Happacher (10%)

- **Attività a carico LNF:**

- smontaggio e test del calorimetro di KLOE
- test di funzionamento e estrazione del magnete
- smontaggio yoke
- definizione nuova FEE



- **Richieste CSN2 2024:** 100k tools estrazione magnete, 50k rifacimento pontile carrabile, 50k supporto estrazione magnete (ditta esterna), 100k supporto smontaggio yoke (ditta esterna), 100k noleggio gru per carico camion, 250k packaging

- **Richieste LNF 2024:** 0.25mu Serv. Ing. Elettrotecnica DA, 0.25mu Serv. Impianti a Fluido DT, 0.5mu Serv. Impianti Criogenici DA

# NU\_AT\_FNAL (DUNE)

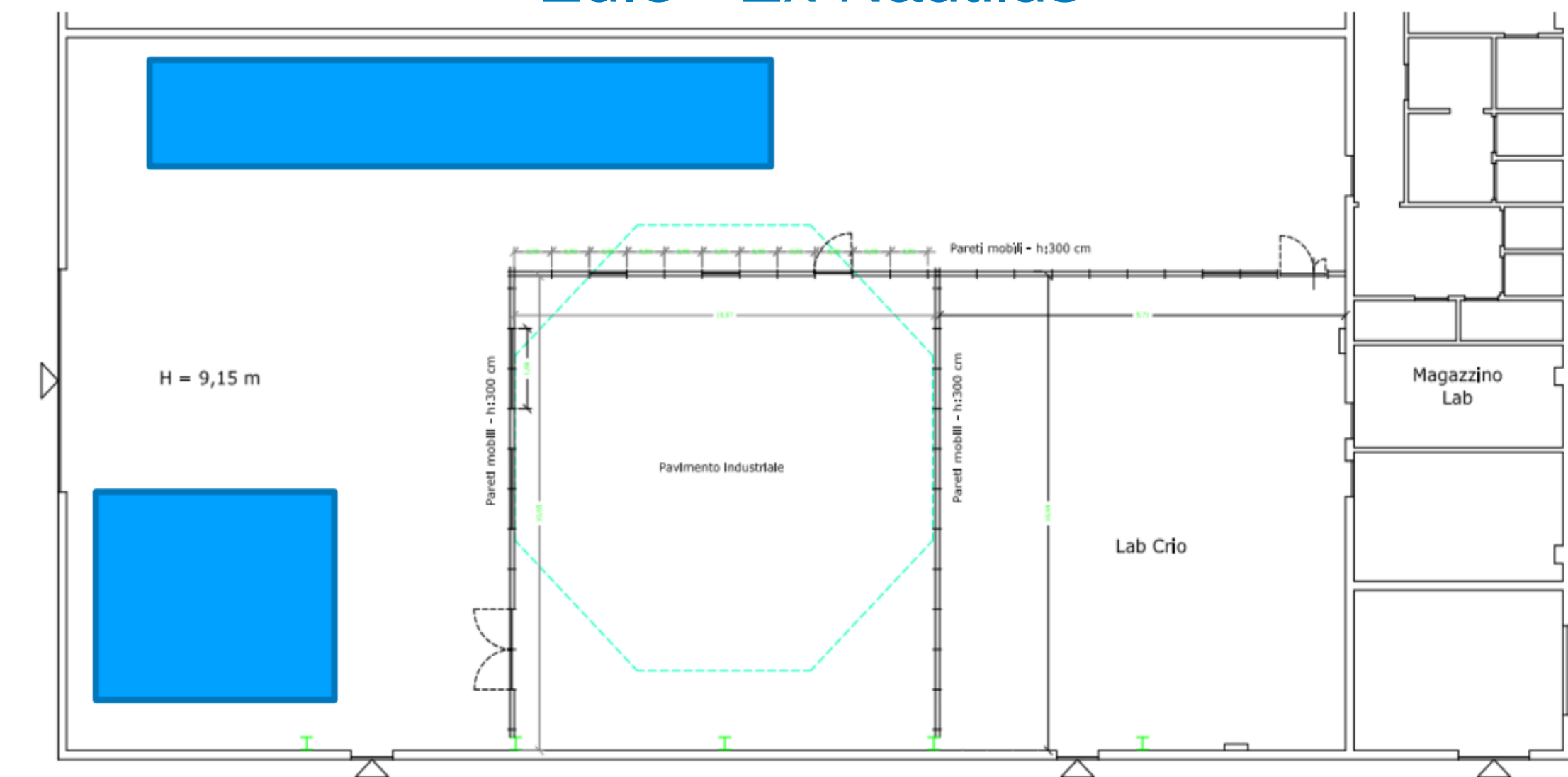
## Utilizzo Spazi LNF 2023

- 50 m<sup>2</sup> Edificio 8 – Ex Nautilus: ora 32 racks elettronica
- 25 m<sup>2</sup> Edificio 8 – Pollaio ex-BESIII: ora DC (da spostare in area expo)  
in futuro: area test calorimetro
- 25 m<sup>2</sup> Palestra Via Perazzeta (w/DA): ora cavi
- Assegnato spazio Nuovi Capannoni Via Perazzeta (in via di ristrutturazione)

## Richieste Spazi LNF 2024

- Capannone Giallo T1: per racks elettronica

Ed.8 - Ex Nautilus



## Nuova proprietà LNF – Capannoni + Palestra

