

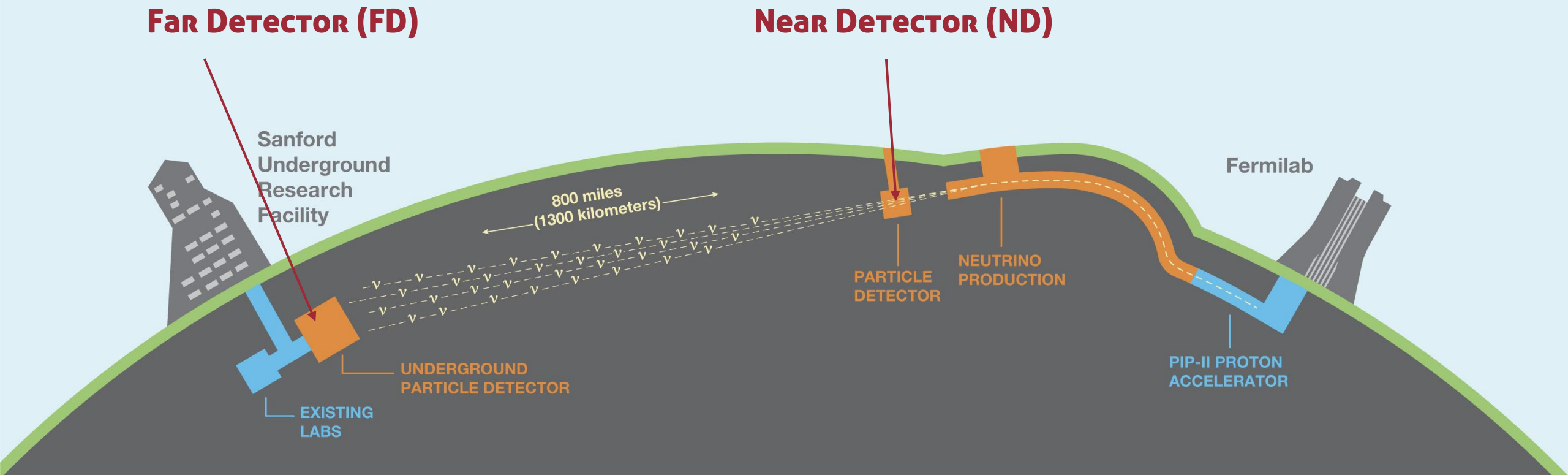
DUNE NU_AT_FNAL

neutrino oscillation study with
Long Baseline Neutrino Facility at FNAL



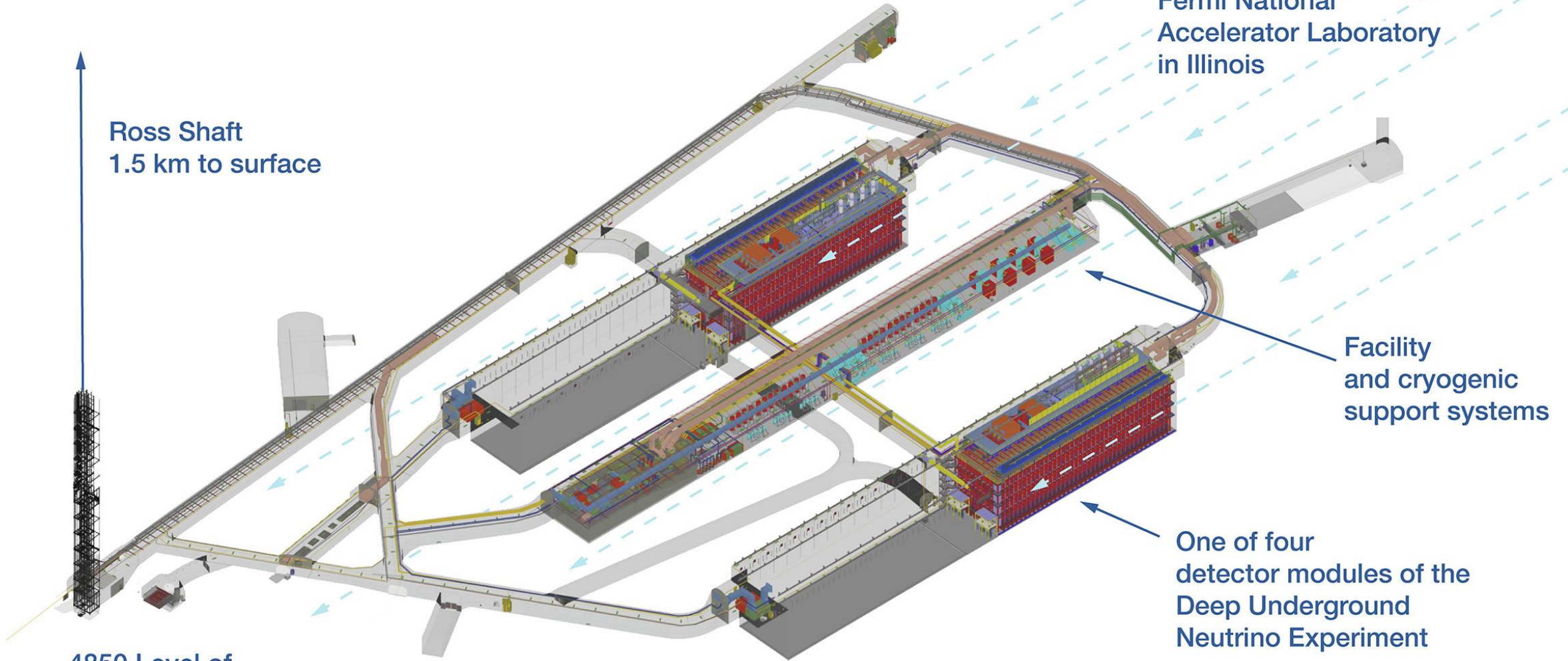
DUNE

- Oscillazione del neutrino con fascio
- Studio di neutrini da Supernovae
- Decadimento del protone



FAR Detector (FD)

Long-Baseline Neutrino Facility
South Dakota Site



Neutrinos from
Fermi National
Accelerator Laboratory
in Illinois

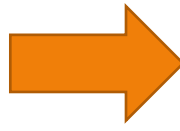
Ross Shaft
1.5 km to surface

Facility
and cryogenic
support systems

One of four
detector modules of the
Deep Underground
Neutrino Experiment

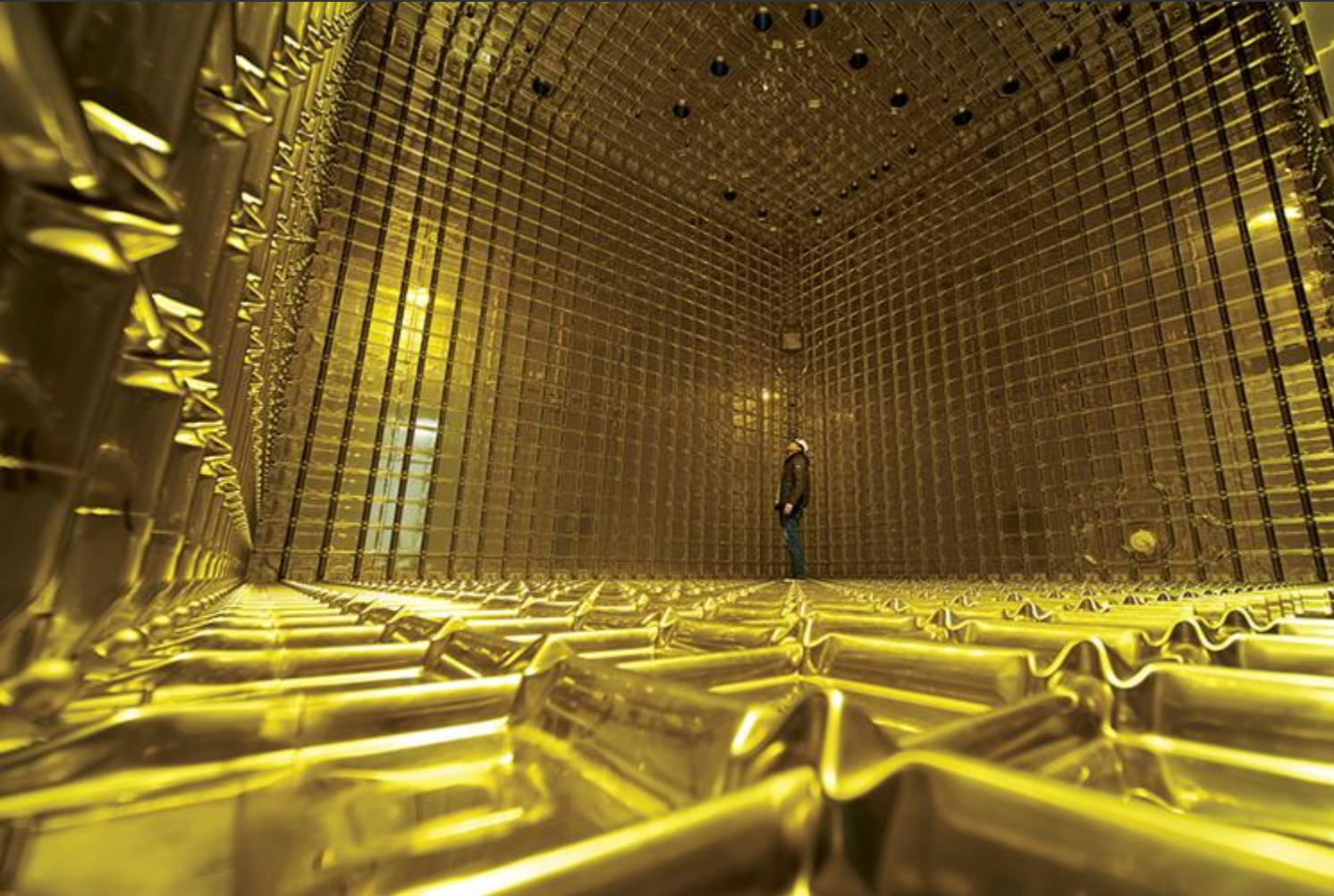
4850 Level of
Sanford Underground
Research Facility

1.2 MW beam
40 kt LAr target



120 kt · MW · yr by 2035

Far Detector (FD)



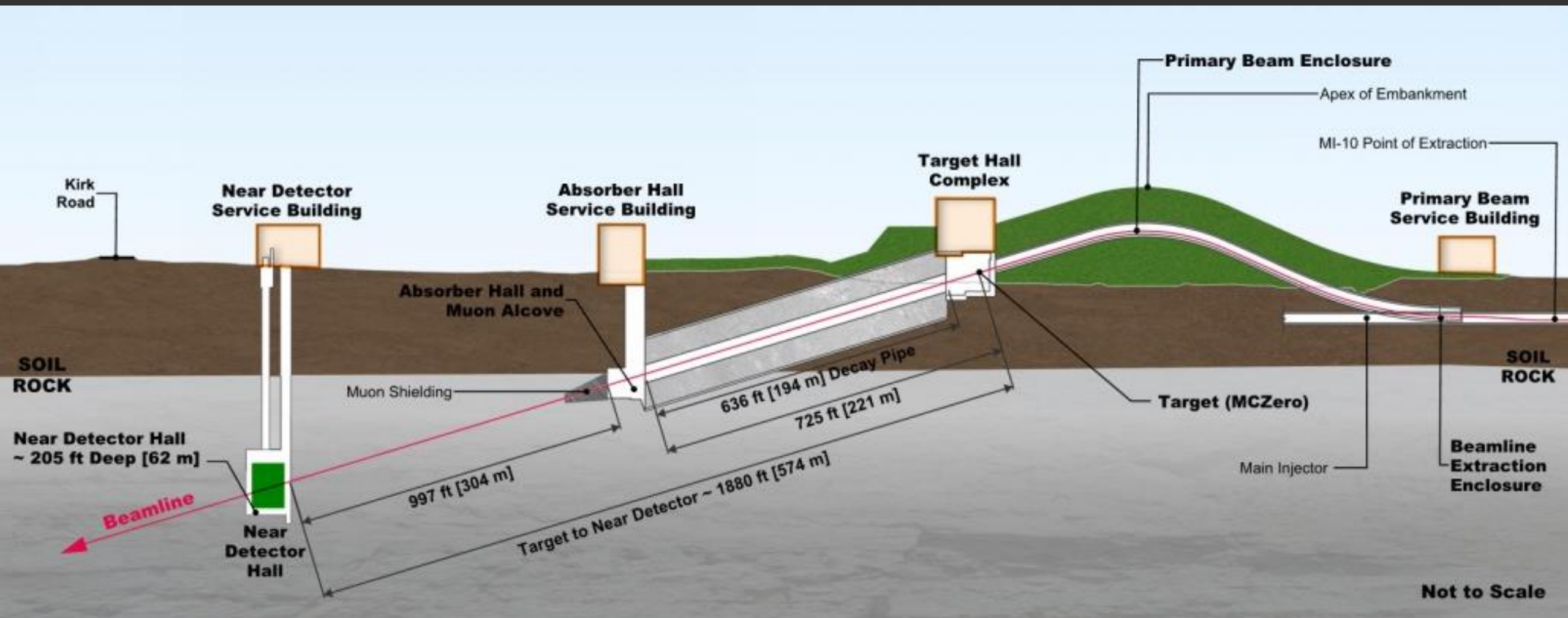
4 LAr TPC
70 kt total volume
40 kt fiducial volume

doppia lettura
elettroni/fotoni

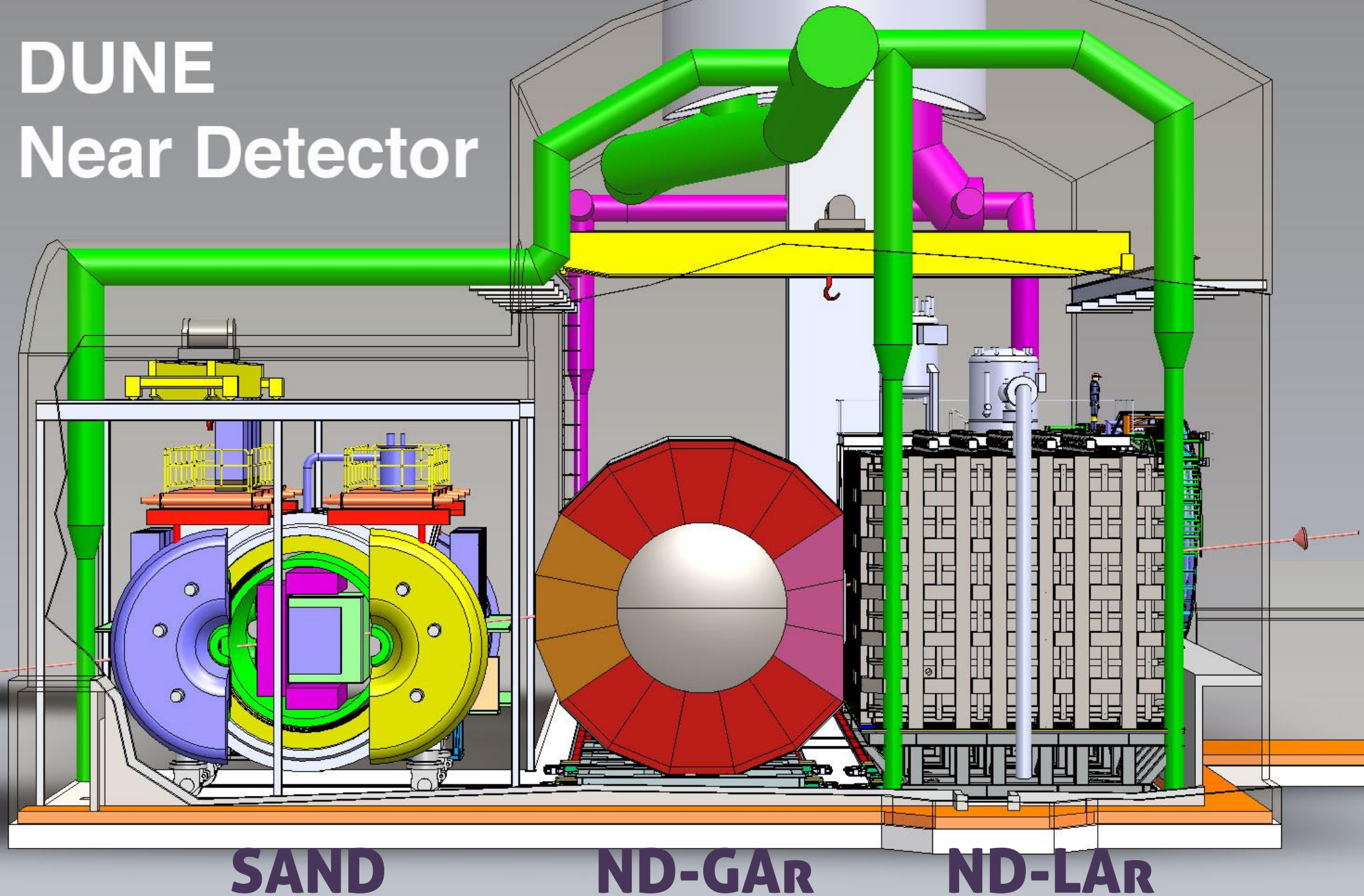
INFN (MIB) in charge of
design and construction of
Photon Detection System

ProtoDUNE
2 x 1 kt LAr TPC at SPS

Near Detector (ND)



DUNE Near Detector

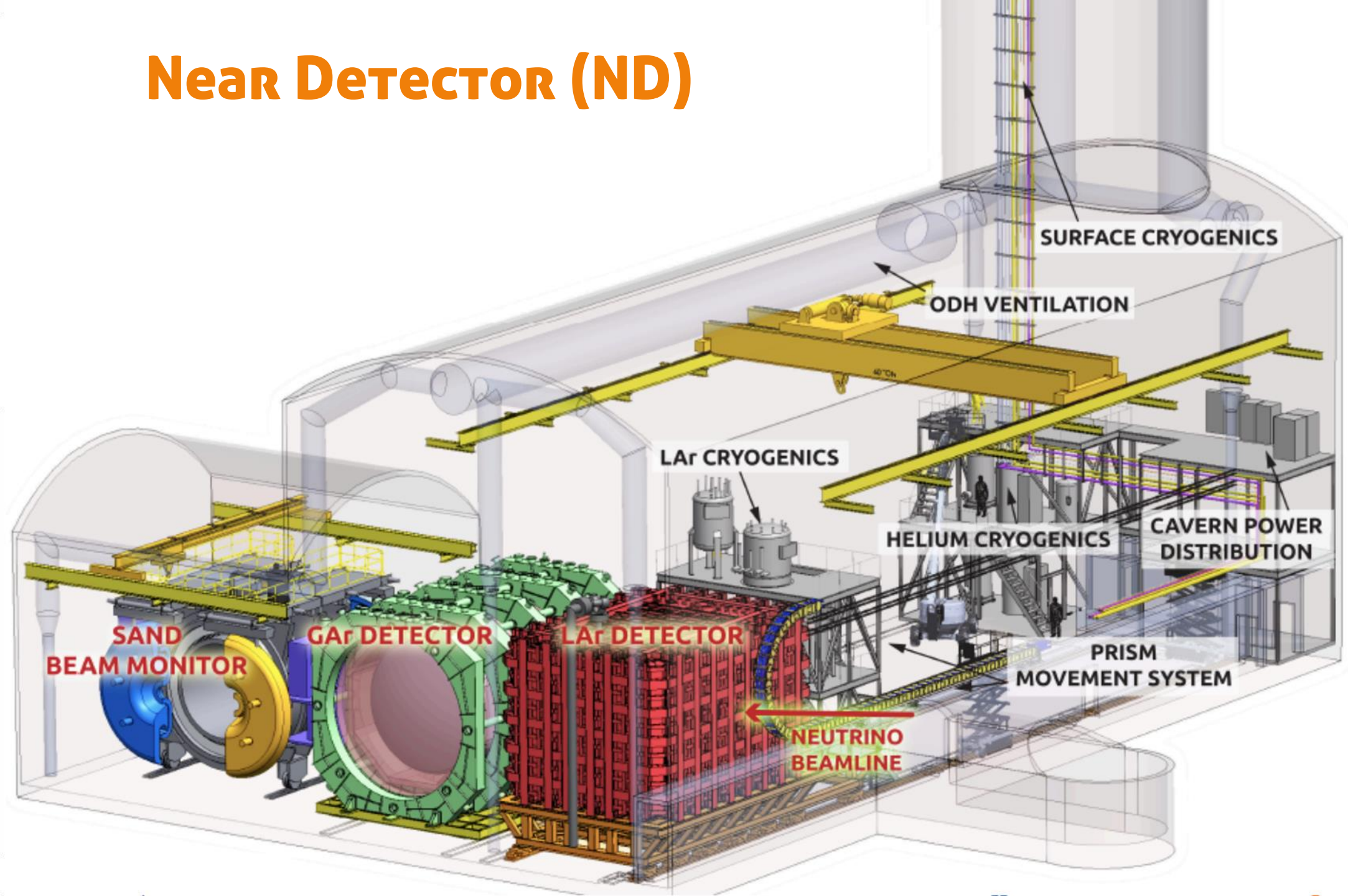


SAND

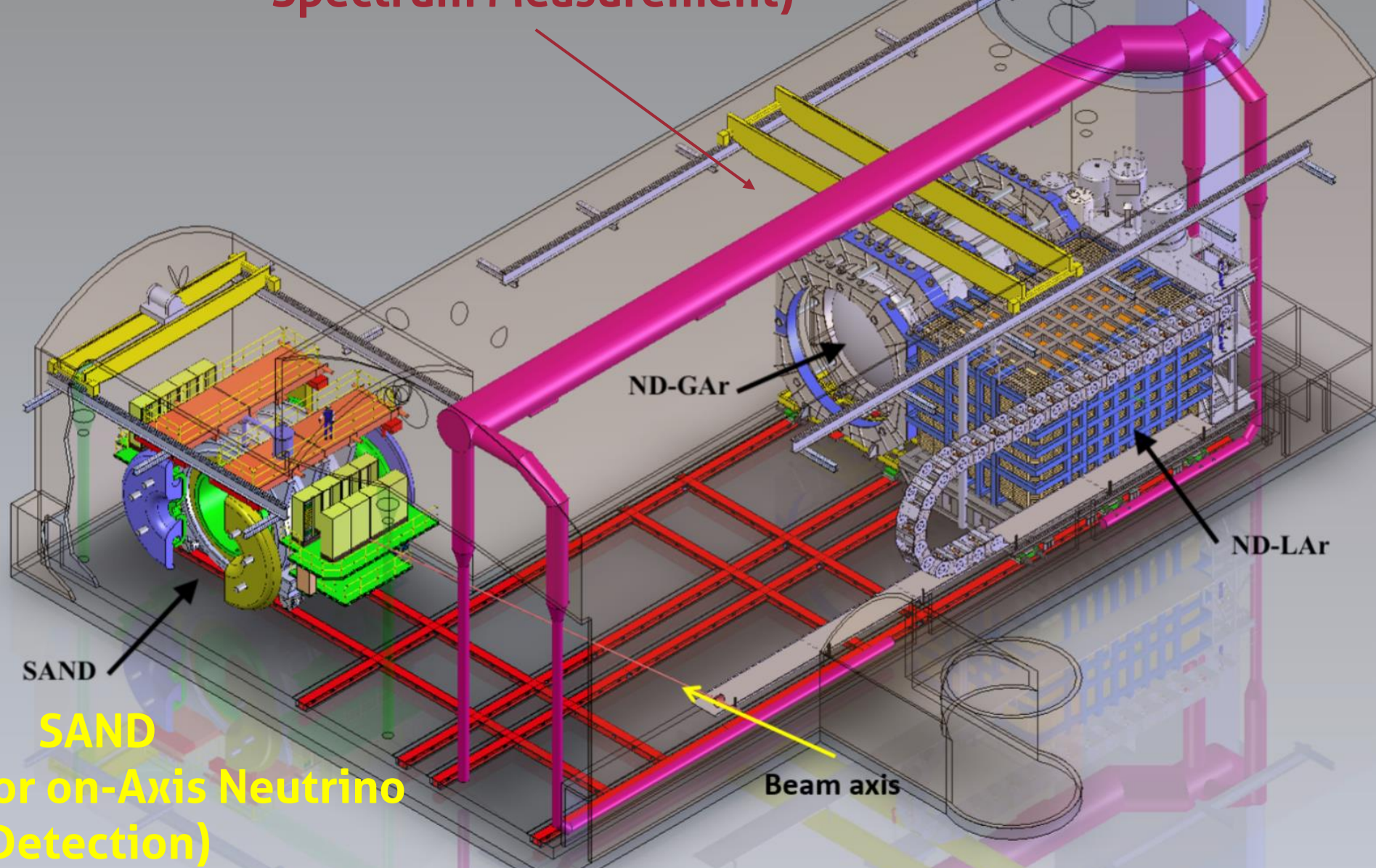
ND-GAR

ND-LAR

Near Detector (ND)



PRISM (Precision Reaction-Independent Spectrum Measurement)



ND-GAr

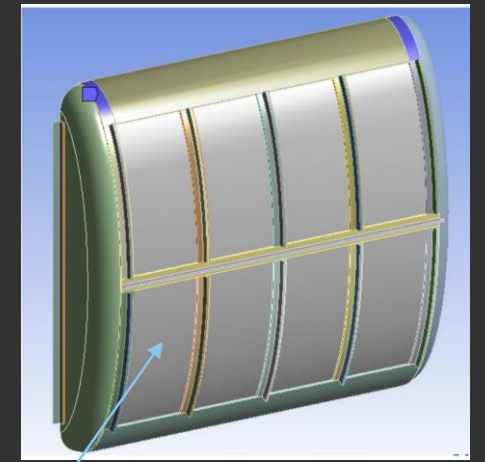
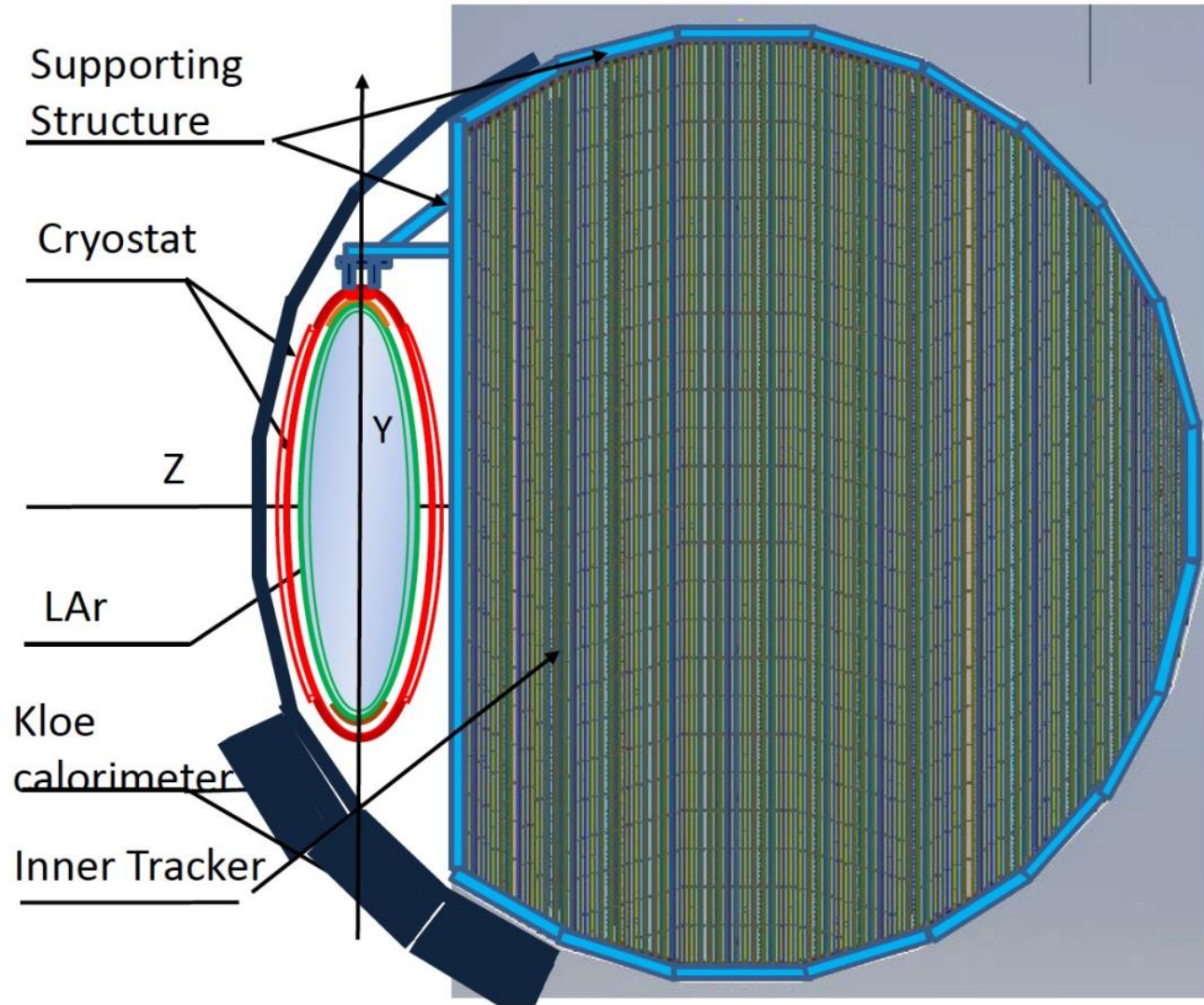
ND-LAr

SAND

Beam axis

SAND
(System for on-Axis Neutrino
Detection)

SAND subdetectors

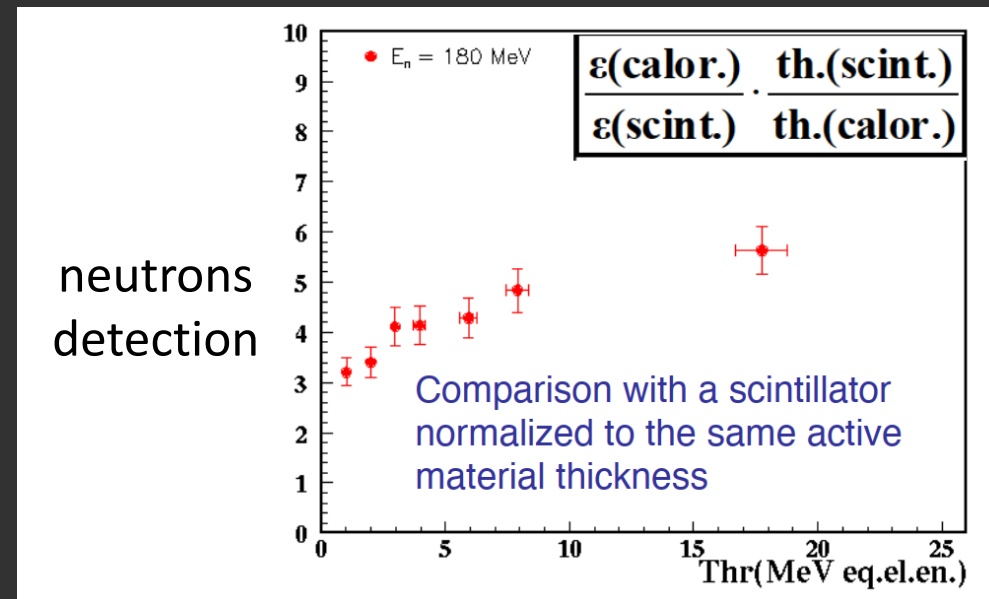
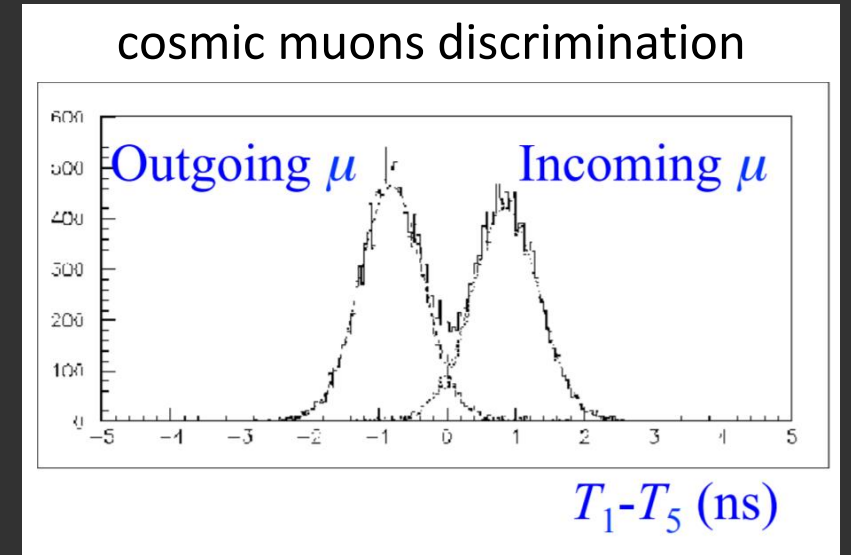
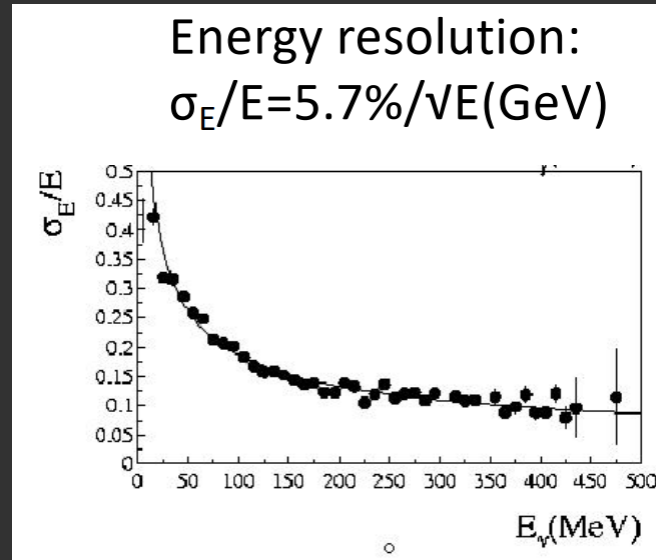
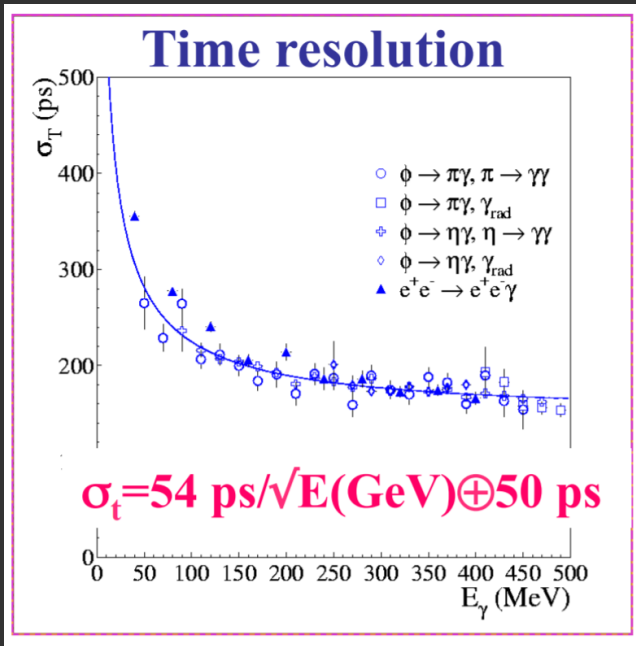


- LAr target
- Straw Tubes Tracker
- Electromagnetic calorimeter
- 0.6 T magnetic field



KLOE
EMC + coil + yoke

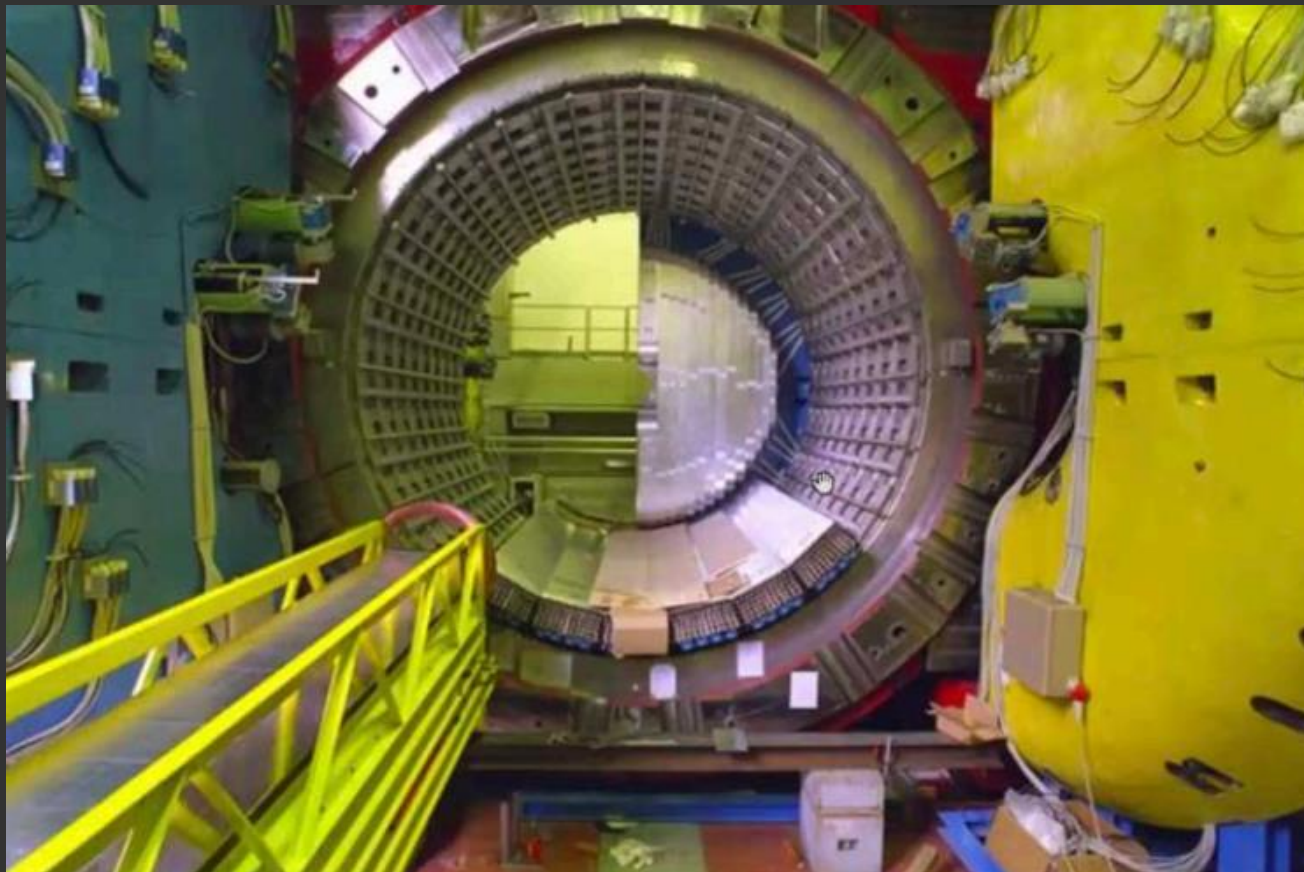
KLOE EMC PERFORMANCE



KLOE



SAND



- remove Drift Chamber (and find a location for exhibit)
- dismounting 24 barrel modules and 2x32 endcaps modules
- store EMC modules at LNF
- ship EMC to FNAL

- refurbish/rebuild all tools
- test/replace/clean up PMTs

- define new LV/HV/FE

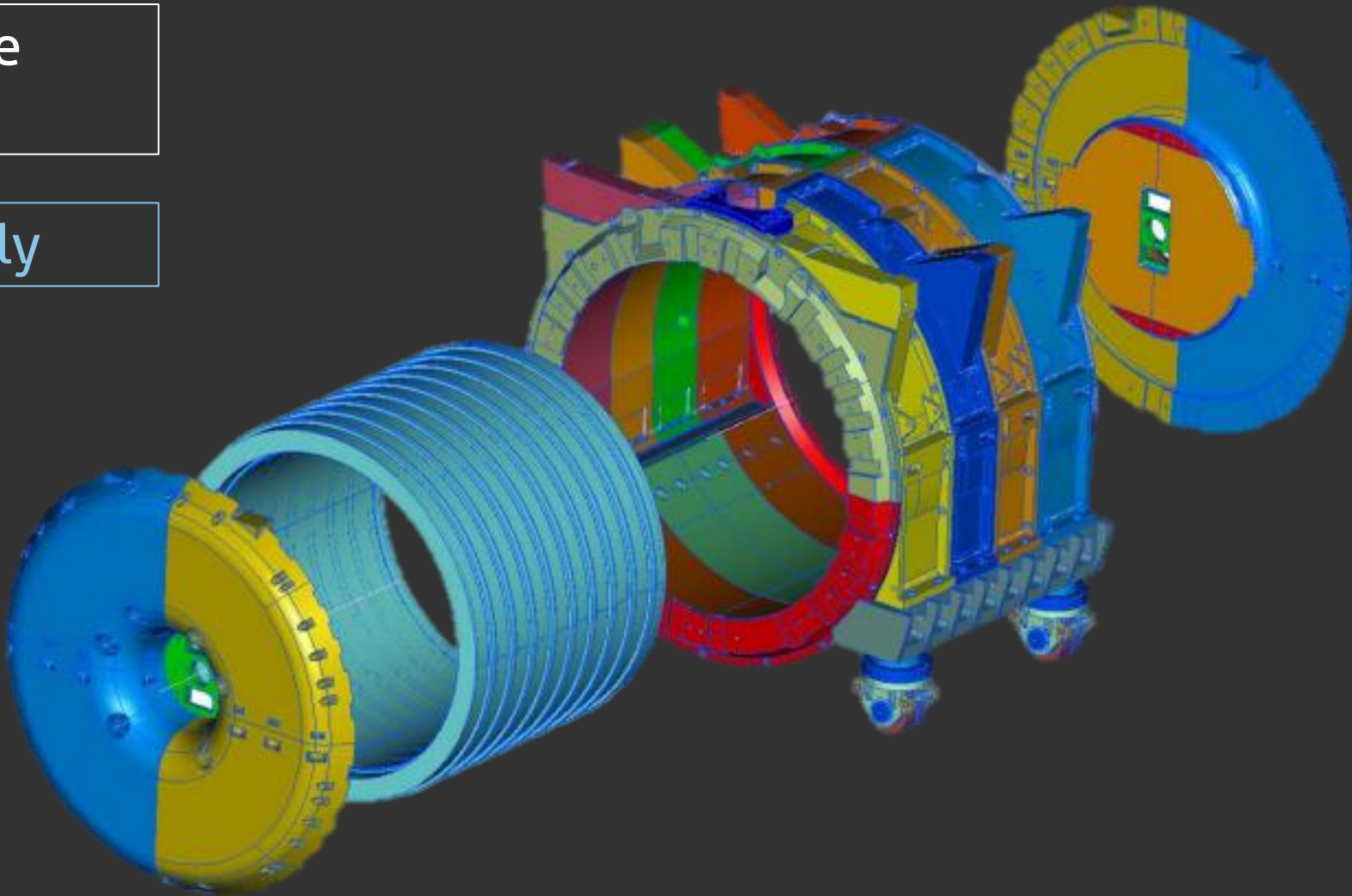
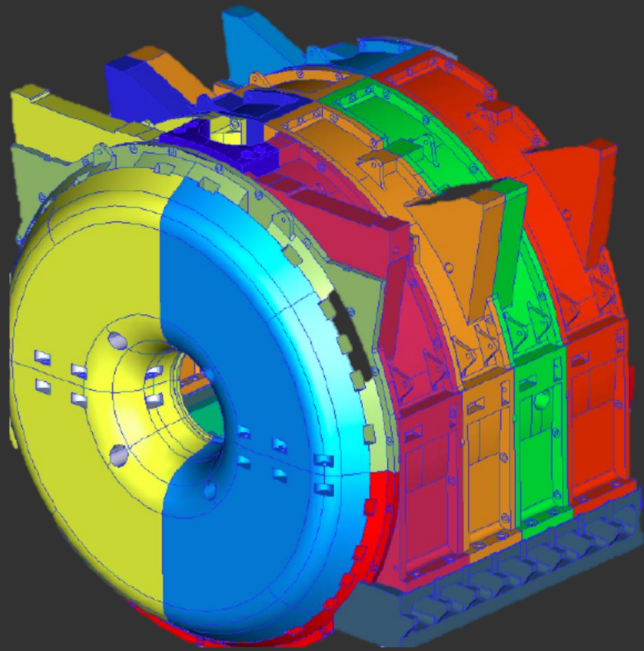
KLOE



SAND

- dismount coil and iron yoke
- ship magnet to FNAL

- renew magnet power supply



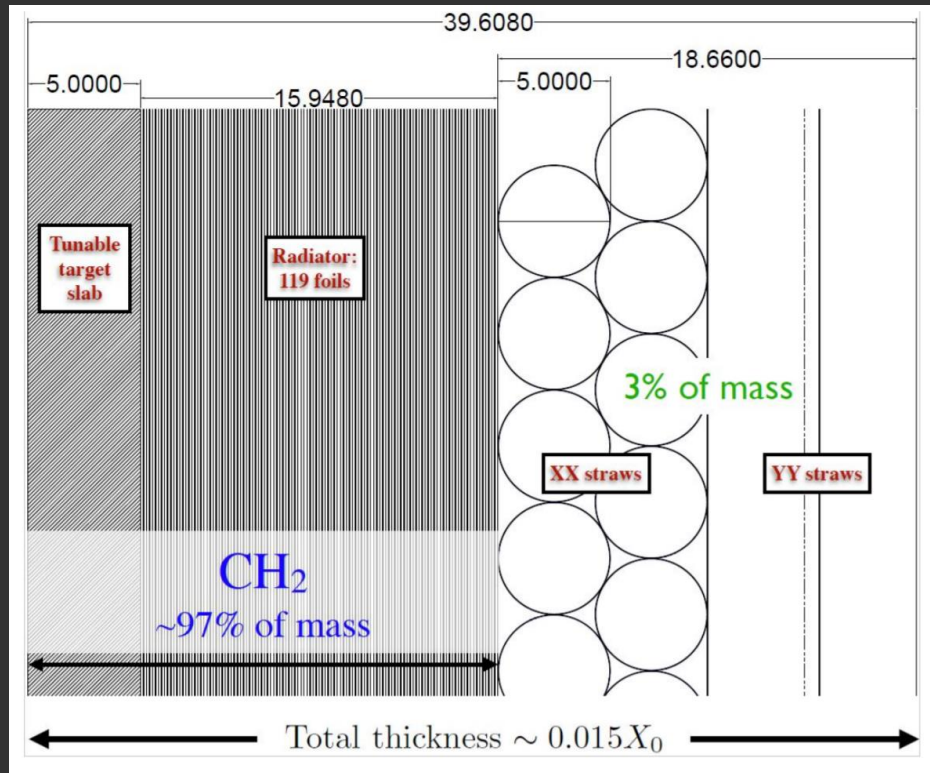
KLOE



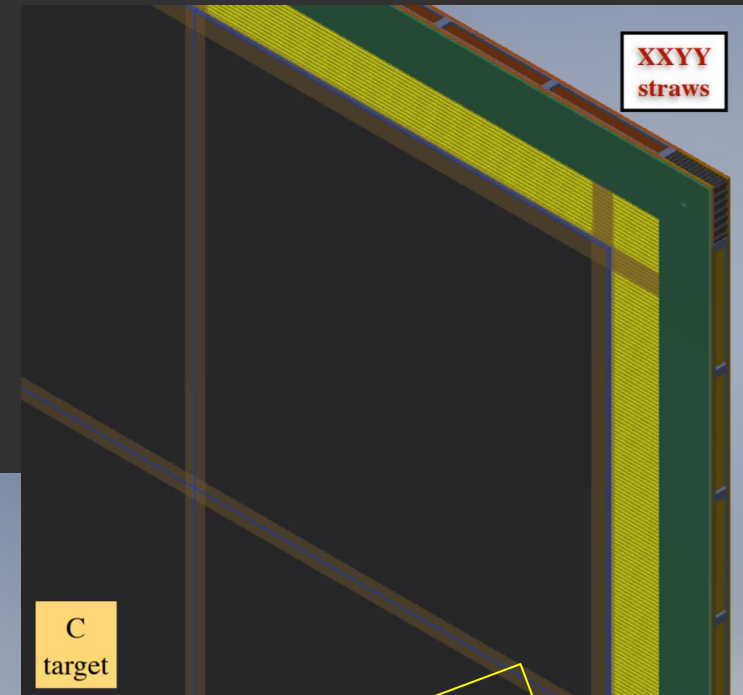
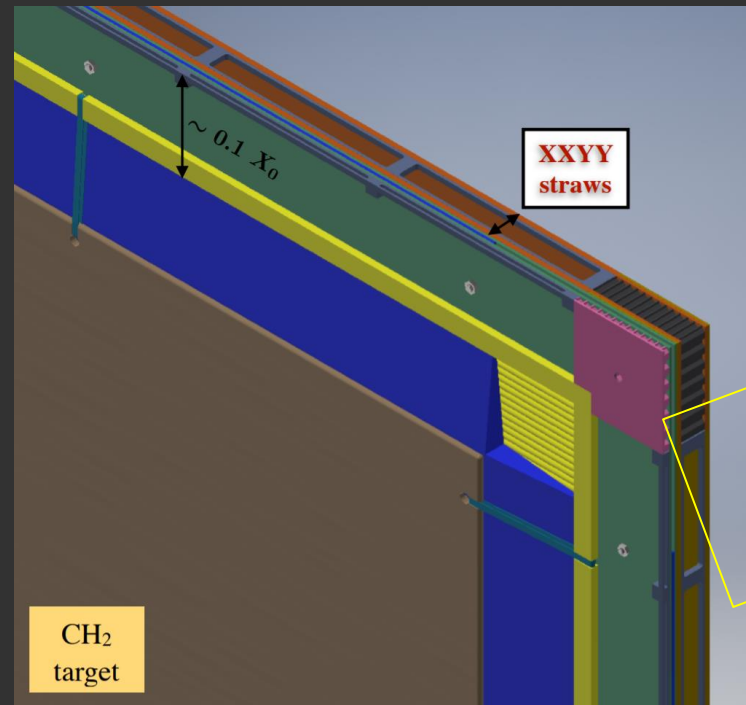
SAND



SAND STRAW TUBE TRACKER




«solid hydrogen» target
C and CH₂ subtraction after
kinematic selection



**STILL TO BE
APPROVED**

- 5 t fiducial mass
- 90 modules
- 2023-25 production in (at least) 3 sites

DUNE Timeline and People

H1 2022	H2 2022	H1 2023	H2 2023	H1 2024	H2 2024	H1 2025	H2 2026	H1 2027	H2 2027	H1 2028	H2 2028	H1 2029	H2 2029
dismounting KLOE ECAL + Magnet					shipping ECAL to FNAL		SAND mounting cabling commissioning					Day1 data taking 	

D. Domenici	40% resp. loc.
S. Miscetti	10%
S. Giovannella	10%
F. Happacher	10%
I. Sarra	10%
E. Diociaiuti	10%
L. Benussi	10%
M. Iliescu	??

Richieste

- 10k€ missioni
- 15k€ consumo
- 2mu tecnico per supporto scablaggio KLOE