

Timeline and goals for 2026

part II

Conveners: Lea Di Noto – Univ. and INFN Genova
Alessandro Montanari- INFN Bologna

DUNE-IT meeting at LNF

Nov, 11th 2025



ASIC design

- **ASIC design**

- First meeting with Torino group: January 2024
- Real work started on summer 2024
- Submission expected on September 2026
- 2 months for production

Layout ready: Feb 2025

Submission: Sep 2026

Delivery w/o packaging :
Dec 2026

- **ASIC packaging**

Delivery with Packaging: Feb
2027

- Few checks have to be performed before the order
- 2 months for production

Readout

- **Preliminary tests for**

- Feedthroughs
- check of components in cryogenics environments

- **Readout design: first phase**

- Front-end board for Tests ASIC

By Dec 2026

- Probe cards

- For full test of chip at room temperature with Tests socket by Feb 2027

- For test few channels at cold temperature

By March 2027

- Warm interface board

Second run submission: (1 year later the first): Dec 2027

Readout -- Future

- **Readout design: second phase**
 - Front-end board
 - Warm interface board
 - Cold Interface board (if necessary)

To be ready for the delivery of the second run : April 2028

Prototype tests

for lens based optical detector

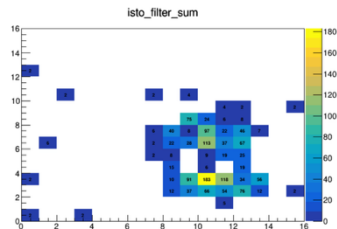
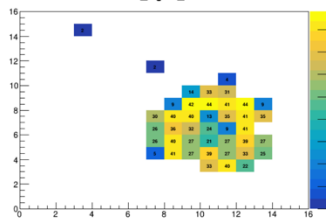
- Genova Front-end board **released** from To
- DAQ **released** from BO

Oct-Dic 2023

DAQ optimization
for test pulse

Jan-Jul 2024

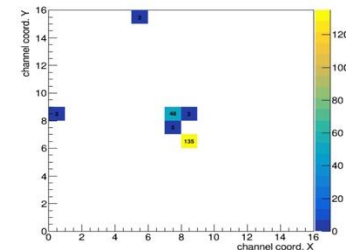
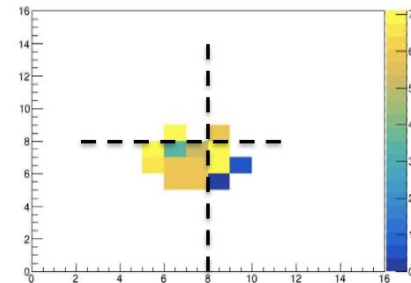
DAQ optimization for light signal
detection
at room and at cold temperature



Sep-Dic 2024

TPB tests successfully

First test with lens in
ARTIC



Jan-Jul 2025

Prototype tests

for lens based optical detector

present

- We need to test prototypes in conditions as close as possible to GRAIN
- Tests in Liquid Argon
 - In the same condition as in the previous runs
- Tests with 2 mm x 2 mm SiPM with new TPB deposition :
 - → for validating the design and the deposition technique
- Finalization of the mechanics design for gas tightness
- The GOAL is validate the design and simulations with an artificial light source

Prototype tests

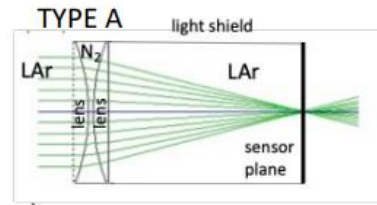
for lens based optical detector

future (mid-2026)

Lens design optimization : try other focal length

Type A

gas between the two
plane-convex lenses



Material: Corning® HPFS 8655 glass

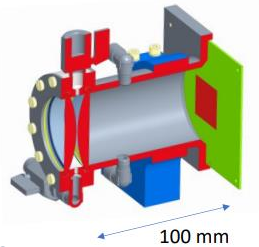
Focal length: 89 mm

1. **Smaller diameter:** 50 mm

Thickness: 12 mm

2. **Bigger diameter:** 60 mm

Thickness: 20 mm



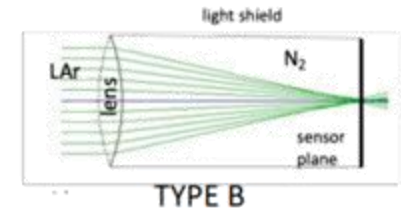
Material: MgF_2

Diameter: 66 mm

Radius of curvature: 60 mm

Type B

gas between the bi-convex
lens and the sensor

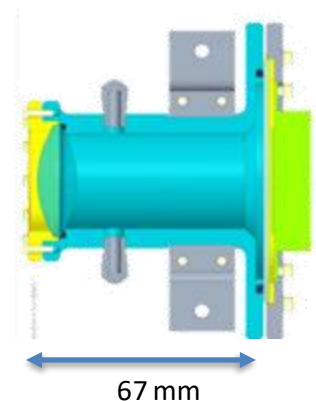


Material: Corning® HPFS 8655 glass

Focal length: 64 mm

Diameter: 50 mm

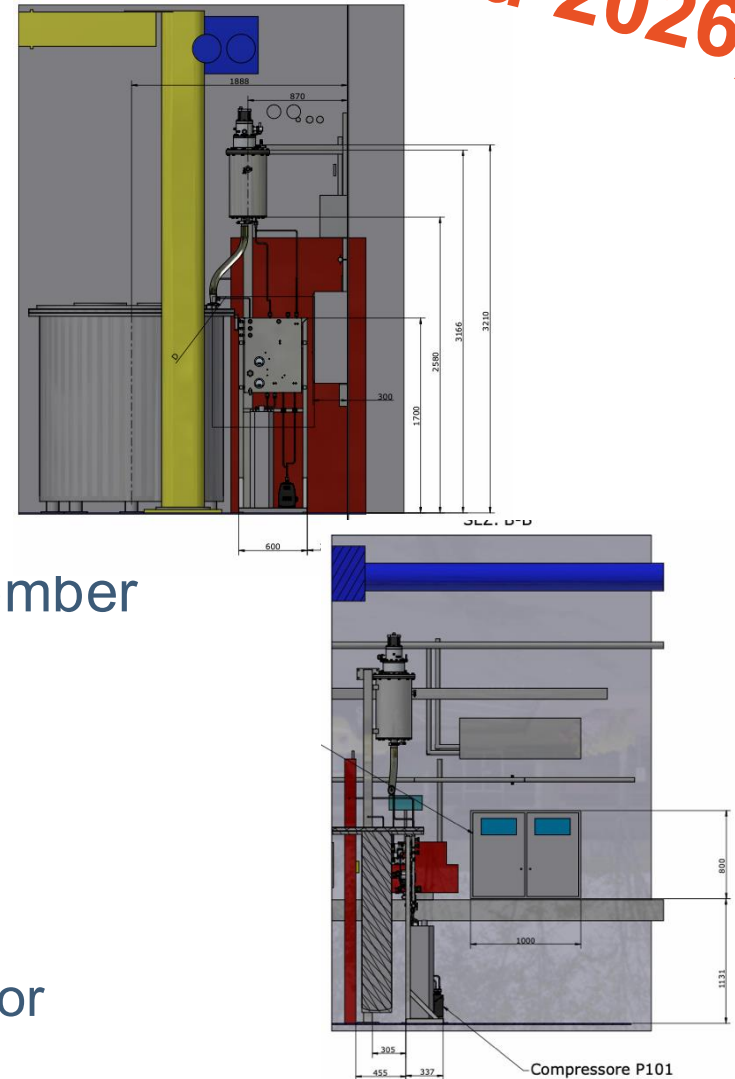
Thickness: 18 mm



ARTIC upgrade

future (mid-2026)

- ARTIC upgrade with a dedicated
 - LAr recirculation and purification system
 - Xenon doping system
- Cryocooler delivered at Criotec in September
- The layout in the Lab is finalized
- We are submitting the order for
 - Electrical line for cryocooler placed outdoor
 - Enclosing box and support



Detector timeline

- Test on prototypes with ALCOR, with DENEb v0, with DENEb v1
 since 2024 since June 2027 since June 2028



- Detector layout optimization
 Dec 2027 (?)



- Procurement



- Camera calibration and mouting
 Nov 2028



- Test in Legnaro
 Feb → July 2029

Main goals 2026

- 2 milestones:
 - ASIC submission
 - Lens design validation
- + Inner vessel and sliding system delivery!

