



NUFACT 2025

WG6: Detectors

Conveners:
Claudio Giganti (LPNHE)
Tanaz Mohayai (Indiana Univ.)
Akira Takenaka (SYSU)

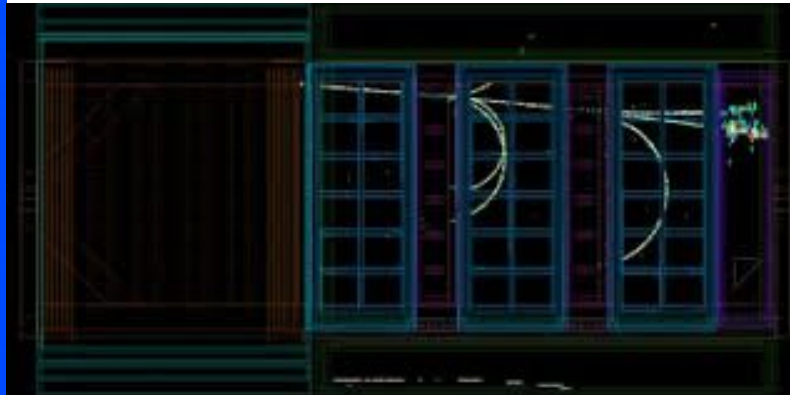
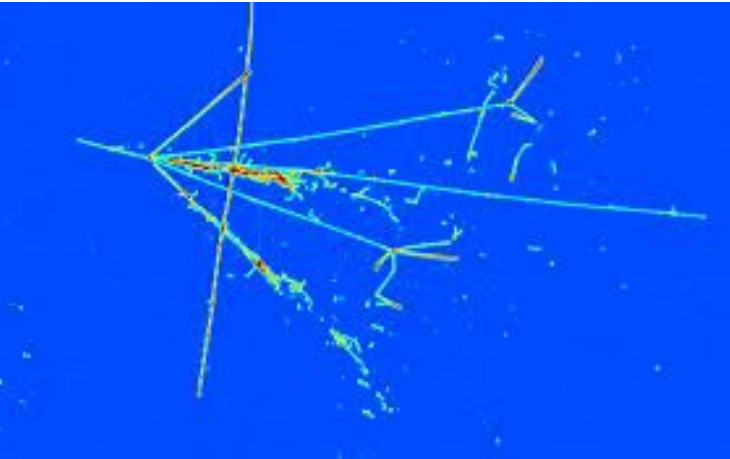


WG6 Mandate

Hardware & software for neutrino and muon detectors

Topics: TPCs, scintillators, photon & calibration systems, DAQ/electronics — with strong connections to tracking, calorimetry, and other cross cutting methods

Software tools: AI/ML and advanced calibration strategies



WG6 at NuFact 2025

6 parallel sessions → distilled from community submissions

Themes:

1. Unique topics & experiment updates
2. Gaseous detectors & emerging technologies
3. Photon detection & calibration systems
4. Software, reconstruction & AI/ML
5. Near detector upgrades & tracking
6. Joint session with WG4

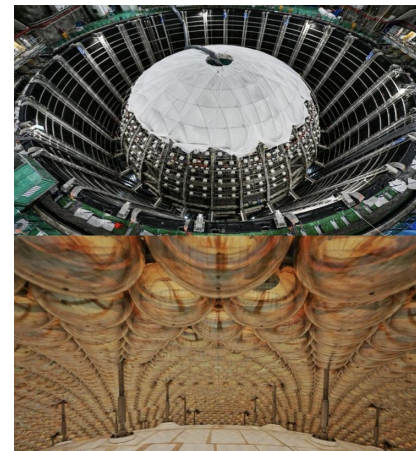
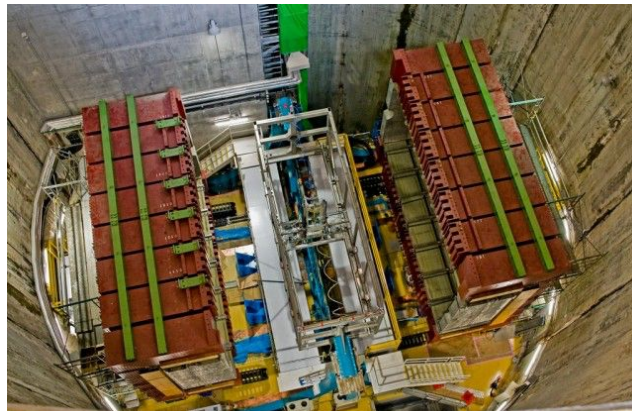
5 posters

4 plenaries

The Broader Detector Landscape

Neutrino Detector Frontiers

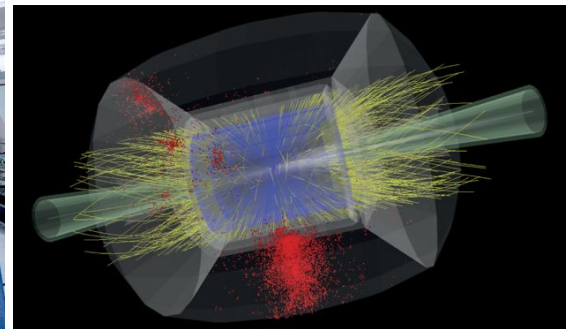
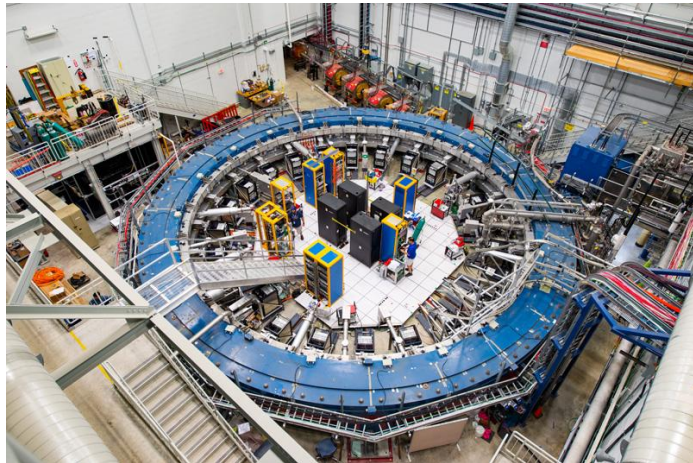
- Extreme range of scales in the detectors:
 - Massive underground targets:
 - i. → **Plenary 1: Updates on water Cherenkov or water-enhanced technologies**
 - ii. → **Plenary 3: JUNO**
 - iii. → **Plenary 4: Liquid Argon Technologies**
 - LAr TPCs (DUNE ND) + novel concepts e.g. PTOLEMY:
 - i. → **Session 1: Unique Topics & Experiment Updates**
- Precision NDs:
 - Systematic control with ND upgrades (Phase II ND Upgrade in DUNE, ND280++ in T2K)
 - i. → **Session 2: Gaseous Detectors & Emerging Technologies & Plenary 2**
 - ii. → **Session 5: Near Detector Upgrades & Tracking**



The Broader Detector Landscape

Muon Detector Frontiers

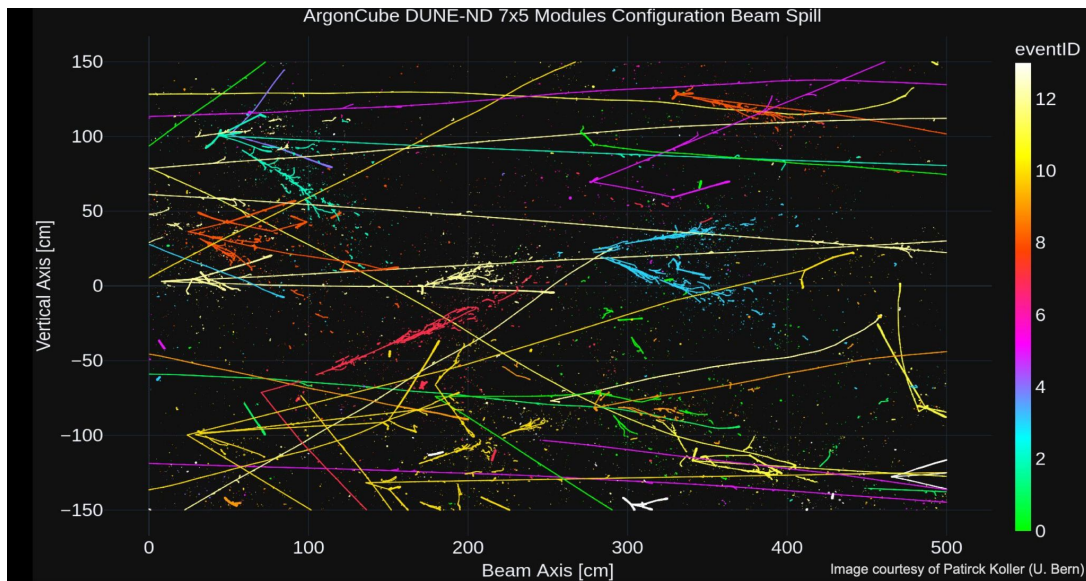
- Rare decays (Mu2e, COMET): ultra-low background, precision tracking & calorimetry
- Precision measurements ($g-2$, EDM): ultra-high rate detectors, fast timing, calorimetry
 - Ultra-low background, precision tracking, calorimetry
 - → **Joint WG4+WG6: rare processes & precision measurements**
- Future colliders (Muon Collider)
 - MPGDs, calorimetry, fast timing in extreme environments
 - → Overlapping synergy with **Session 2: Gaseous Detectors & Emerging Technologies**



The Broader Detector Landscape

Cross-Cutting Technologies

- Timing, background rejection, energy scale control
 - → **Session 3** Photon detection & calibration
 - → **Session 2** Gaseous Detectors and **Emerging Technologies**
- Turning complex detector data into physics observables; critical for systematics
 - → **Session 4** AI/ML-enabled reconstruction



WG6 Session Details

11:00

Direct neutrino mass with the PTOLEMY demonstrator

Space 8, The Spine, Liverpool

James Mead 

11:00 - 11:25

Toward Additive Manufacturing of 3D-Segmented Scintillator Particle Detector

Space 8, The Spine, Liverpool

Dr Umut Kose

11:25 - 11:50

12:00

DUNE's ND-LAr and its prototyping program (2x2 and FSD)

Space 8, The Spine, Liverpool

Richard Diurba

11:50 - 12:15

13:00

14:00

Commissioning and first data from T2K's near detector upgrade

Space 8, The Spine, Liverpool

Tristan Daret

13:45 - 14:10

Performance of the High-Angle Time Projection Chambers in the Upgraded T2K Off-Axis Near Detector

Samira Hassani et al.

Long-term performance evaluation for eco-friendly Resistive Plate Chamber detectors

Space 8, The Spine, Liverpool


Marilisa De Serio

14:35 - 15:00

15:00

Update on the PoWER Proposal for DUNE Phase II

Space 8, The Spine, Liverpool

Andre Fabiano Steklain Lisboa 

15:00 - 15:25

16:00

Photon-Detection System of DUNE Far Detector

Space 8, The Spine, Liverpool

Carmen Palomares

16:15 - 16:40

Preparation of 50cm PMTs for Hyper-Kamiokande experiment

Space 8, The Spine, Liverpool

Takuya Tashiro

16:40 - 17:05

17:00

Multi-Photomultiplier Detectors in the Water Cherenkov Test Experiment

Space 8, The Spine, Liverpool

Krzysztof Dygmarowicz

17:05 - 17:30

The Hyper-Kamiokande Light Injection Calibration System

Space 8, The Spine, Liverpool

Dr Sam Jenkins

17:30 - 17:55

Parallel Sessions 1, 2, 3:

Tuesday, September 2

WG6 Session Details

11:00	Deep Learning at DUNE <i>Space 8, The Spine, Liverpool</i>	<i>Prof. Jianming Bian</i> 11:00 - 11:25
	Development of the computing framework for monitoring the quality of ProtoDUNE offline data <i>Gabriela Vitti Stenico</i>	
12:00	Track Matching Across Detectors: Using GNNs to Match Particles across DUNE's Near Detector Prototypes <i>Dr Jessie Micallet</i>	
13:00		
	The Super Fine-Grained Detector for the T2K long-baseline neutrino experiment <i>Space 8, The Spine, Liverpool</i>	<i>Davide Sgalaberna</i> 13:45 - 14:10
14:00	Time-of-Flight Detector Commissioning and Prospects for Physics in T2K <i>Space 8, The Spine, Liverpool</i>	<i>Soniya Samani</i> 14:10 - 14:35
	ND280++, the multi-ton upgrade of the magnetised near detector for the Hyper-Kamiokande high-statistics ph... <i>Davide Sgalaberna</i>	
15:00	The ANNIE Experiment: Overview and Status <i>Space 8, The Spine, Liverpool</i>	<i>Luis Mora-Lepin</i> 15:00 - 15:25

Parallel Sessions 4, 5:

Thursday, September 2

WG6 Session Details

Posters, Monday Afternoon

Sep 1, 2025

17:30	Hyper-Kamiokande Light Injection System - Unik Limbu	17:30	Neutron scintillation in liquid Argon for reducing uncertainties in neutrino oscillation experiments - Dr Ralte Lalnuntluanga (Tel Aviv University)
17:30	First Neutrino Candidates in the ProtoDUNE-HD data - Dario Pullia (CERN)	17:30	Time-of-Flight Detector in the T2K ND280: From Commissioning to First Physics Insights - Anezka Klustova
17:30	The LED pulser system for the Hyper-Kamiokande outer detector light injection system - Dr Sam Jenkins (University of Liverpool) Mr Balint Bogdan (University of Liverpool)		

WG6 Session Details

Plenary 1 & 2 Monday Afternoon

2 Sept 2025	
4:15 PM	Updates on water Cherenkov or water-enhanced technologies - Lauren Anthony (Imperial College (GB))
4:45 PM	R&D efforts on gaseous detectors - Tanaz Mohayai (Indiana University)

Plenary 3 & 4 Wed & Fri Mornings

Sep 3, 2025	
10:30 AM	Liquid Argon Technologies - k Mavrokoridis (University of Liverpool (GB))
Sep 5, 2025	
9:00 AM	Plenary (until 10:30 AM)
9:00 AM	JUNO - Zhiyuan Chen (Institute of High Energy Physics, Chinese Academy of Sciences)

Nu(fun)Fact: Neutrinos...& Detectors

- In the NuFact agenda, **detectors** is the most frequent keyword after **neutrino**
- Detector work connects many parts of the program
- WG6 is where we focus on the R&D side of that story

499 of 499 matches Begins with

NuFact 2025 - The 26th International Workshop on Neutrinos from Accelerators

1 Sept 2025, 08:00 → 6 Sept 2025, 13:55 Europe/London
Liverpool, UK

Description To be held at the Spine, Liverpool, 1-6 September 2025, hosted by the University of Liverpool.

Public Europe/London T. Mohayai

1 of 216 matches Begins with

NuFact 2025 - The 26th International Workshop on Neutrinos from Accelerators

1 Sept 2025, 08:00 → 6 Sept 2025, 13:55 Europe/London
Liverpool, UK

Public Europe/London T. Mohayai

Everyone is welcome to join our sessions!

And looking forward to everyone's talks and posters, this week!