

# Workpackage 8 - Calorimetry and Particle ID

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AIDAinnova WP8 Session at Annual Meeting March 2024



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004761.

## **Task 8.1. Coordination and Communication (CNRS-IJCLab, INFN-PV)**

- Since last Annual Meeting: Katja Chair of Governing Board

## **Task 8.2. Towards next generation highly granular calorimeters**

- Integration aspects of highly granular calorimeters (DESY, CNRS-IJCLab, CNRS-LLR, CNRS-LPNHE, JGU, CERN, TAU, FZU)
- Future Liquid Noble Gas Calorimeters (CERN, CNRS-IJCLab, CUNI)

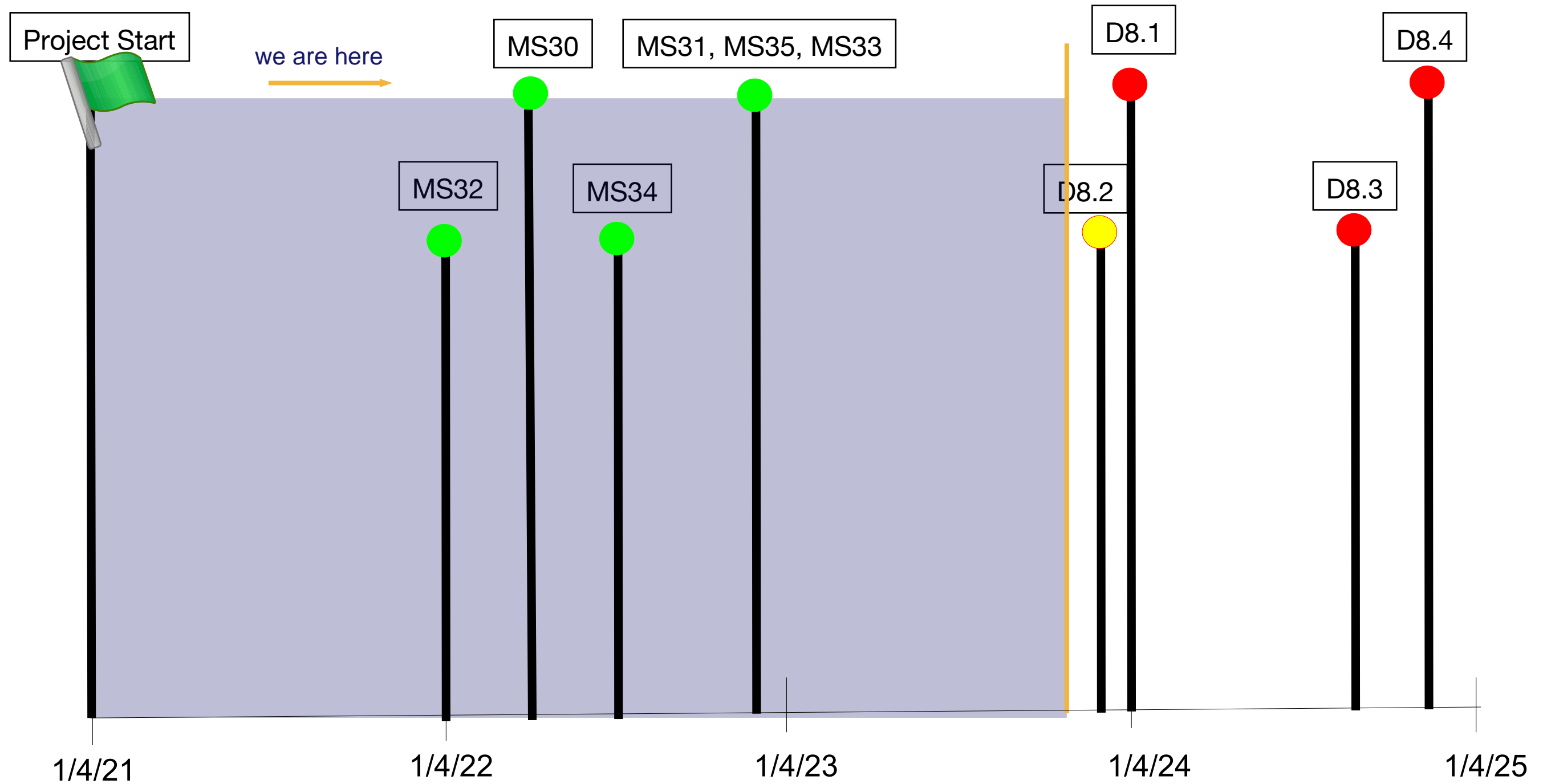
## **Task 8.3. Innovative calorimeters with optical readout**

- Crystal detectors (CERN, FZU, VU, INFN-PG, INFN-LNF, INFN-TO)
- Large area scintillator detectors (MPP-MPG, DESY, INFN-BO, INFN-LNF, JGU)

## **Task 8.4. Innovative solid-state light sensors and highly-granular dual-readout fibre-sampling calorimetry**

- Innovative SiPMs and future applications in PID detectors (JSI, INFN-PD, INFN-TO, CERN, FBK, UiB, FZU, FOTON)
- Development of highly-granular dual-readout fibre-sampling calorimeters (INFN-PV, INFN-MI, INFN-PI, INFN-BO, UOS, CAEN)

# WP8 - Timeline



#MS	Description	Task	Due	Type	Lead
MS30	Conceptual design and technical specifications of DAQ interfaces for highly granular electromagnetic and hadronic calorimeters	8.2	M15	Report to StCom	DESY
MS31	Design and simulation of LAr readout electrode	8.2	M23	Report to StCom	CUNI
MS32	Test benches for testing detecting materials in picosecond and sub-picosecond domains.	8.3	M12	Specs data sheet	CERN
MS33	Design and test of scintillating tiles or strips with large active area suitable for large area detectors.	8.3	M15 → M23	Operational Testbenches	MPG-MPP
MS34	Definition of SiPM requirements and performance studies with simulations of different use cases.	8.4	M18	Report to StCom	JSI
MS35	Definition of the assembly method and of the ASIC specifications for a dual readout calorimeter.	8.4	M23	Report to StCom	INFN-MI

#D	Description	Task	LEad	Type	Dissemination	Due
D8.1	Demonstrator of a combined read-out system of highly granular electromagnetic and hadronic calorimeters	8.2	DESY	DEM	PU	M36
D8.2	Report on prototypes construction, performance and assessment of industrialisation	8.3	CERN	R	PU	M35
D8.3	Qualification of neutron irradiated SiPMs at different temperatures.	8.4	JSI	R	PU	M44
D8.4	Construction and qualification with beam of 10×10 cm <sup>2</sup> , 2 m long, prototypes	8.4	INFN-MI	DEM	PU	M46

- All four deliverables due between M35 (29/2/24) and M46 (31/1/25)
  - Two early 2024 (i.e. now)
- Report for D8.2 in hands of AIDAInnova Management, thus nearly accomplished
- Will have to shift D8.1 by 6 months
  - See 8.2.1 talks

- **Regular Taskleader Meetings**
  - Among others: Reminder on publications and orientation to publication committee
    - Expect that number of publications will increase in coming months
- **WP8 Face-to-Face Meeting 18/1/24**
  - <https://indico.cern.ch/event/1344030/>
- **Mailing lists**
  - [AIDAinnova-WP8-Taskleaders@cern.ch](mailto:AIDAinnova-WP8-Taskleaders@cern.ch) contains all task leaders
  - [AIDAinnova-WP8-Institutes@cern.ch](mailto:AIDAinnova-WP8-Institutes@cern.ch) contains one contact per group/institute
  - [AIDAinnova-WP8-General@cern.ch](mailto:AIDAinnova-WP8-General@cern.ch) with self-subscription, open for everyone who is interested

## Training the next generation of African detector students

At the end of August, AIDAinnova detector scientists travelled to South Africa to organise an Instrumentation School.

By Antoine Le Gall (CERN)

The next generation of African detector scientists is eager to learn. Last August, just before the [TIPP conference](#), the [Instrumentation School in Particle, Nuclear and Medical Physics](#) took place at IThemba LABS in the Western Cape, in South Africa.

Over the course of one week, 25 MSc and PhD students coming from many different African countries – South Africa, Cameroon, Botswana, Egypt, etc. – took part in a series of lectures about particle detectors. Some of the students had already worked on detector experiments, at ATLAS and ALICE for instance, and were happy to learn about other types of detectors.

The school was punctuated by five sessions with hands-on experiments led by international instructors. “The students had the opportunity to cut their teeth on different detectors - silicon pixel ones, micro-pattern gas ones, cloud chambers, calorimeters, etc. -, operate their many parameters - calibration, signal - while using the same software and tools that we are using for real research”, explain Roman Poeschl from IJCLab. “This hands-on experience will be scaled up with real experiments”.

The school is sponsored by CERN, Germany’s DESY, France’s IJCLab and South Africa’s NRF. The first three labs all play a major role in AIDAinnova. “I am happy that we could use for the school hardware developed in the frame of AIDAinnova’s predecessor AIDA2020.”, adds Roman.

The positive feedback is testimonial to the importance to tie links with African institutes, some of which are already or are to become members of several experiments.

Link

Current Issue

On

Newsletter Issue

[October 2023](#)

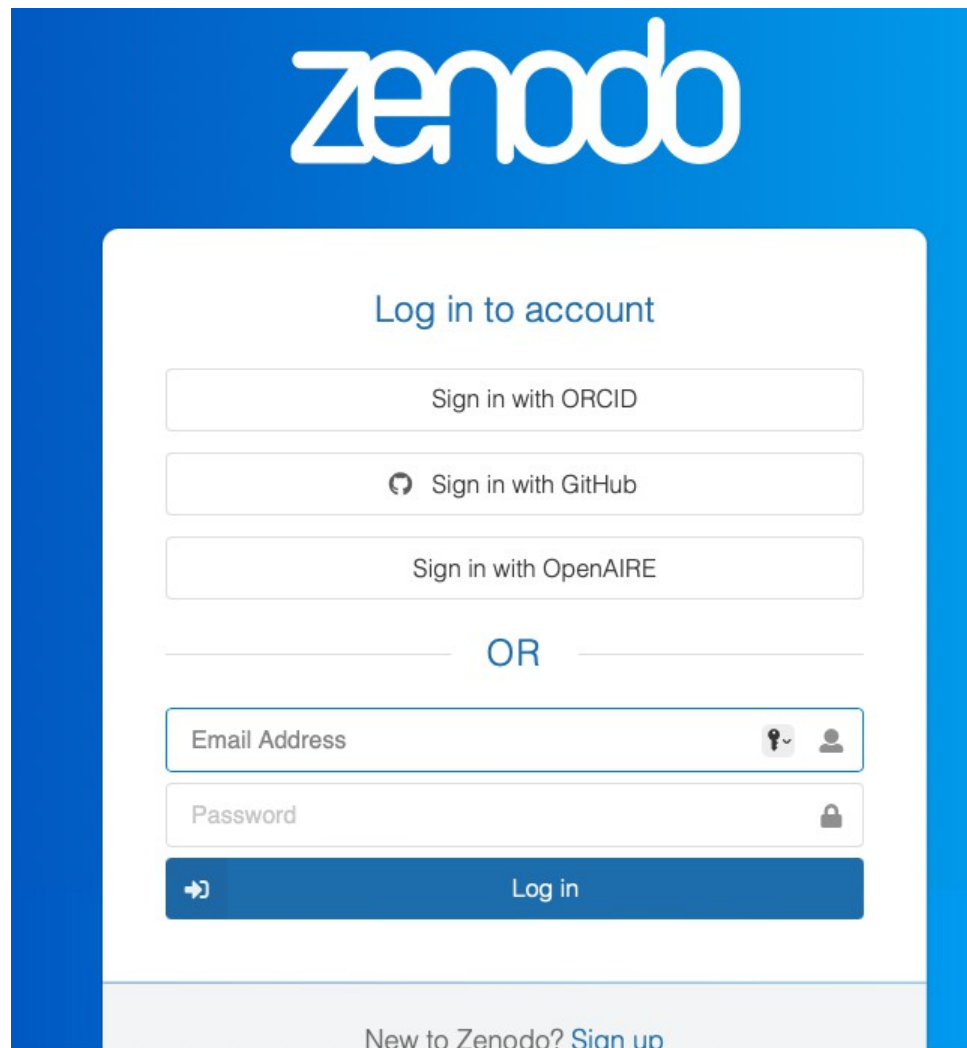


- [Article realised with Antoine Le Gall](#)
- [Encouragement to try to get more on track articles](#)

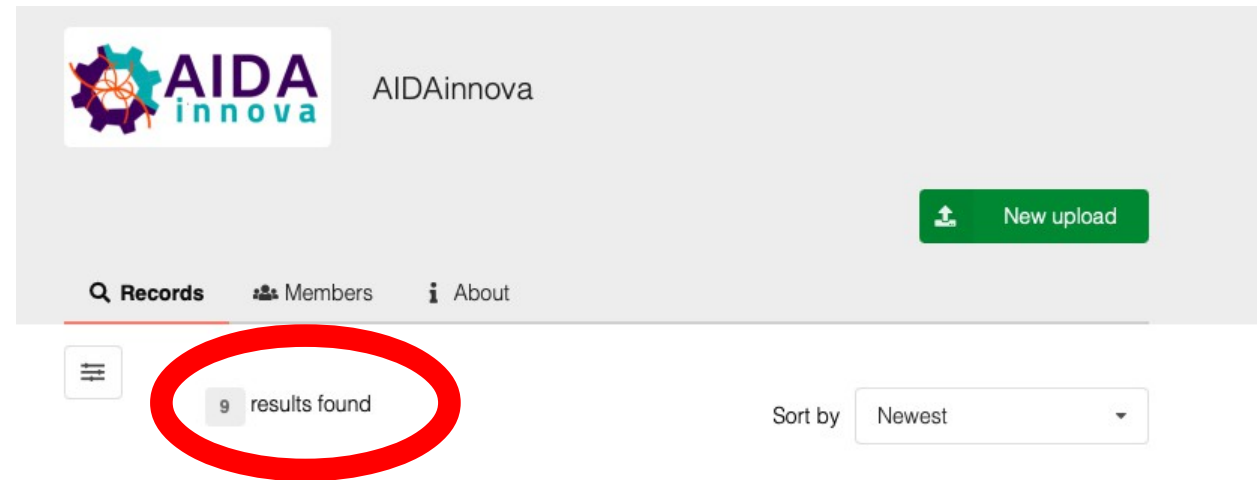
- After nearly three years into the project it's time to take care of publications that benefit from AIDAinnova
- Publications are everything like papers, conference proceedings, conference talks and posters and other communication
- Please acknowledge AIDAinnova with the following text
  - “This project has received funding from the European Union’s Horizon 2020 Research and Innovation programme under GA no 101004761.”
  - Otherwise the publication is not eligible as AIDAinnova publications
  - For talks a simple logo may do the job but latest when it comes to proceedings and papers the text is mandatory
- Upload publication to Zenodo portal and/or let us know
  - Details under: <https://aidainnova.web.cern.ch/publications>
  - More on Zenodo on next slide
- In principle the WP Coordinators are responsible for a proper review of a publication that carries the AIDAinnova acknowledgement
  - Note that AIDAinnova offers publication review for publications that are not reviewed elsewhere
  - <https://aidainnova.web.cern.ch/results/publication-committee>



<https://zenodo.org/login/?next=%2Fuploads%2Fnew%3Fcommunity%3Daidainnova-project>



The image shows the Zenodo login page. At the top, the Zenodo logo is displayed in white on a blue background. Below the logo, the text "Log in to account" is centered. There are three buttons for social login: "Sign in with ORCID", "Sign in with GitHub", and "Sign in with OpenAIRE". Below these is a horizontal line with "OR" in the center. Underneath are two input fields: "Email Address" and "Password". A blue "Log in" button is at the bottom of the form. At the very bottom, there is a link: "New to Zenodo? Sign up".



- **Currently 9 WP8 publications**
  - 7 MS reports and two papers
- **Usage of Zenodo is a bit painful**
  - When submitting no correlation to WP can be made
    - So far nearly submissions have been made by Sabrina
  - AIDAInnova related publication by browsing for “AIDAInnova community” within Zenodo
- **Try yourself and/or contact Roberto when you intend to submit a publication**
- **Sabrina will give more info at and after this meeting**

Collab.	Topic	Initial Proposal Submission	approval
DRD 1	Development of Gaseous Detectors	July 2023	Dec. 2023
DRD 2	Liquid Detectors	July 2023	Dec. 2023
DRD 3	Solid State Detectors	3 Oct. 2023	
DRD 4	Photon Detectors and Particle Identification Techniques	July 2023	Dec. 2023
DRD 6	Calorimetry	July 2023	Dec. 2023
DRD 5	Quantum and Emerging Technologies		later
DRD 7	R&D Collaboration for Electronic Systems	LoI submitted	later
TF 8	Integration	-	later

← PID and Calorimetry

- DRD4 and DRD6 approved for an initial period of three years
- Work in WP8 will be essential during ramp up phase of DRDs (partially only funding source)

## Financial reporting about Period 2 (P2) – Beneficiaries

😊 *You now benefit from P1 reporting experience! It will be very similar.*

➤ **P2 dates: 01.10.2022 – 31.03.2024 (18 months)**

➤ **Financial report: must be submitted by Coord. (CERN) before 31.05.2024**

☐ Per email (Internal Resources Utilisation Summary = IRUS, for Full costs follow-up per WP)

- Financial contact will receive template in March 2024
- Financial contact must send back the **IRUS file by 20.04.2024**

☐ On the Portal (Financial Statement = FS, for Requested EU contribution)

- The module will open automatically on 01.04.2024
- Financial contact must submit their institute's **Financial Statement** to Coord. **by 15.05.2024**

- **WP8 at the eve of delivery phase**
  - Four deliverables between now and (preliminary) end of project on March 31<sup>st</sup> 2025
- **Time to harvest the results --> Publications !!!!**
  - Please provide us with information
- **WP8 is also “nucleus” for DRD Calorimetry**
  - Both WP Coordinators are heavily involved in the preparation of the start of the collaboration
- **Looking forward to a rich set of results at today's meeting**



## Beneficiaries:

CAEN (Industry)  
CERN  
CNRS-IJCLab, CNRS-LLR, CNRS-LPNHE  
CUNI  
DESY  
FBK (“Interface to industry”)  
FZU  
INFN-BO, INFN-LNF, INFN-PD, INFN-PG,  
INFN-PV, INFN-TO  
JSI  
JGU  
MPP-MPG  
TAU  
University of Bergen  
University of Sussex  
Vilnius University

## Associated Partners:

FOTON (Industry)  
GLASS2POWER (Industry)  
Minsk  
HZDR  
Crytur