

WP4 Session

Upgrade of Irradiation and Characterization Facilities

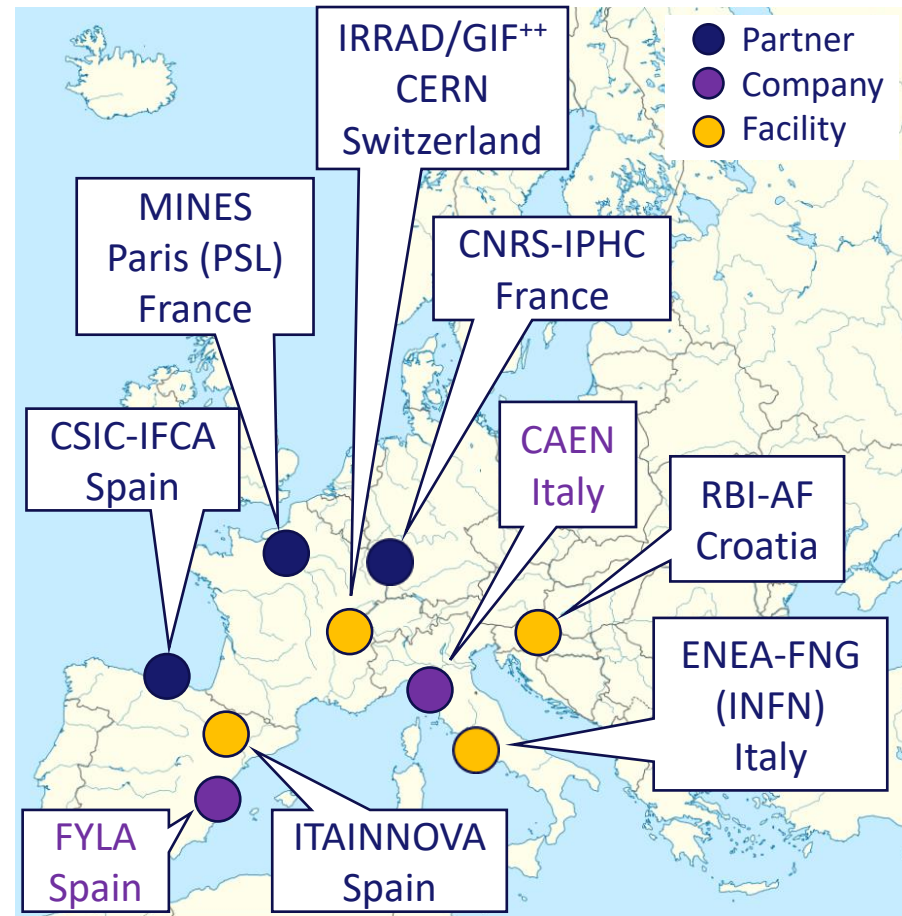
Fernando Arteche (ITAINNOVA), Federico Ravotti (CERN)

AIDAinnova 3rd Annual Meeting – Catania (IT), 18 March 2024



- Irradiation and characterization tests required for the next generation of particle detectors demand more accurate and reliable procedures, as well as a higher efficiency in their execution
- ***The main goal of WP4 is to develop & standardize common tools for testing infrastructure to better support the next detector generation***
 - Improve facilities and systems
- The activities are covered by different partners:
 - Academia
 - Industry
 - Research and Technology Organizations (RTO)
- This good combination of partners aims to ensure the readiness of the detector support infrastructure for high TRL levels

- **Task 4.1:** Task Coordination (CERN, ITAINNOVA)
- **Task 4.2:** Micro-beam Upgrade at RBI Accelerator Facility (RBI)
- **Task 4.3:** Common Tools for Irradiation Facilities QC: Data Management, Traceability, Dosimetry and Activation Measurements (CERN, MINES^(*), INFN, ENEA^(*), CAEN)
- **Task 4.4:** Design & Development of a New Sensor Characterization System based on TPA-TCT Technique (CERN, CSIC-IFCA, FYLA)
- **Task 4.5:** Design & Development of a New Electronics Characterization System for EMC Control (ITAINNOVA⁽⁺⁾, CNRS-IPHC)



(*) Collaborating Institute

(+) RTO



| Milestone or Deliverable | Description | Lead Beneficiary | Month |
|--------------------------|---|------------------|---------------------|
| Task 2 | Micro-beam upgrade at RBI accelerator facility (RBI-AF) | | |
| MS12 | Upgrade RBI-AF infrastructure for detector characterisation, SEE, micro hardness testing | RBI | M23 |
| D4.1 | Integrate the data acquisition and control system at RBI-AF | RBI | M40 |
| Task 3 | Common tools for irradiation facilities Quality Control: Data Management (DM), Traceability, Dosimetry and Activation measurements | | |
| MS13 | Define requirements, global architecture and design the extended DM system for ENEA-FNG and CERN-GIF++ | CERN | M18 |
| MS14 | Extend IDM for FNG, GIF++ and communication with CAEN DigiWaste and CANBERRA Apex-Gamma Platforms | CERN | M36 |
| MS15 | Test RFID tagging for irradiation facilities | INFN | M42 |
| D4.2 | Evaluate Non-Ionizing Energy Loss (NIEL) of irradiation facilities with dedicated dosimeter structures | CERN | M42 |
| D4.3 | Deploy full prototype for irradiation facilities data management with sample tagging and spectrometry features | CAEN | M45 |
| Task 4 | Design & Development of a new sensor characterization system based on TPA-TCT technique | | |
| MS16 | Commission a complete TPA-TCT system | FYLA | M23 |
| D4.4 | Support the implementation of TPA-TCT systems and contribute to the evaluation of new sensors technologies | CERN | M46 |
| Task 5 | EMC Characterization | | |
| MS17 | Apply TF test bench to FEE prototypes | ITAINNOVA | M23 |
| D4.5 | Develop a conductive noise test bench for irradiation facilities | ITAINNOVA | M44 |

- **6 Milestones (MS): M18 – M42:**

- **M36: MS14** achieved during the last year (March 2024)
- **M42: MS15** is the last one (September 2024)

- **5 Deliverables (D): M40 – M46**

<https://aidainnova.web.cern.ch/publications>

September 22, 2022 (v1) Technical note Open Access View

First Irradiation test of U7-XM2 RFIDs at CERN IRRAD Facility

Alfredo María Núñez Herrero;

This documents shows the results of two proton irradiation experiments using radio-frequency identification (RFID) tags. It also defines an initial testing methodology to be used as reference by other irradiation facilities, with the objective of enabling the result comparison of different future re

Uploaded on September 22, 2022

August 16, 2022 (v1) Journal article Open Access View

Characterisation of irradiated and non-irradiated silicon sensors with a table-top two photon absorption TCT system

S. Pape; M. Fernández García; M. Moll; R. Montero; F.R. Palomo; I. Vila; M. Wiehe;

A tabletop Two Photon Absorption-Transient Current Technique (TPA-TCT) set-up built at CERN was used to investigate a non-irradiated PIN diode, an irradiated PIN diode, and a non-irradiated 5 × 5-multipad HPK LGAD. The intrinsic three dimensional spatial resolution of this method is

Uploaded on November 2, 2022

Acknowledgement text

All AIDAInnova publications must include the following acknowledgement text:



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under GA no 101004761.

Please do not forget to include the EC acknowledgement in all your publications (journal articles, conference papers, presentations, internal notes, etc.) related to AIDAInnova and to upload a copy of your publication on [Zenodo](#).

- **12 publication records** for WP4 in Zenodo
 - **7 other than MS reports** (articles, notes, presentations, etc.)
 - 1 in the pipeline for task 4.3, other tasks ?
- **e-groups** to communicate with TLs and WP4 members
- **INDICO category** to host WP- and Task-related meetings:
 - <https://indico.cern.ch/category/13502/> (**14 events**)
- This afternoon **WP4 session agenda**:
 - <https://indico.cern.ch/event/1307202/sessions/502040/#20240318>

- **WP4 Session:**


- One (max. 25min + 5min discussion) report per task
- Coffee break & wrap-up session for further discussions, if needed

- **WP4 Plenary:**

- Wed. 20-Mar @ 15:35
- [WP4 Plenary Talk](#)

< Mon 18/03
Tue 19/03
Wed 20/03
All days >

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| | | |
|-------|---|--|
| 14:00 |  | WP4.1: Introduction by WP Coordination <i>Sala Crociferi</i> <i>Federico Ravotti et al.</i> 14:20 - 14:30 |
| | | WP4.2: Micro-beam Upgrade at RBI Accelerator Facility <i>Sala Crociferi</i> <i>Georgios Provatias et al.</i> 14:30 - 15:00 |
| 15:00 | | WP4.3 - Common Tools for Facilities QC: Data Management, Traceability, Dosimetry & Activation Meas. <i>Federico Ravotti</i> |
| | | WP4.4 - Design & Development of a New Sensor Characterization System based on TPA-TCT Technique <i>Veronika Kraus et al.</i> |
| 16:00 | | Coffee break <i>Bar 1st floor</i> 16:00 - 16:20 |
| | | WP4.5 - Design & Development of a New Electronics Characterization System for EMC Control <i>Fernando Jose Artech Gonzalez</i> |
| 17:00 | | WP4 - Session Wrap-up <i>Sala Crociferi</i> <i>Federico Ravotti et al.</i> 16:50 - 17:10 |

