

# LD2413 Development of $\mu$ RWELL-PICOSEC Detectors

FY24 Q1 meeting

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# FY2413 $\mu$ RWELL-PICOSEC – Q1 Progress & Issues

## What we have achieved so far

- ❖ Dr Akash Pandey started as post doc in Oct 2023 → Lead the FY23 test beam data analysis effort and the preparation of the upcoming test beam
- ❖ Procurement new single-pad and multi-pads  $\mu$ RWELL-PICOSEC prototypes
- ❖ Presentation of FY23 results at the IEEE conference in Vancouver

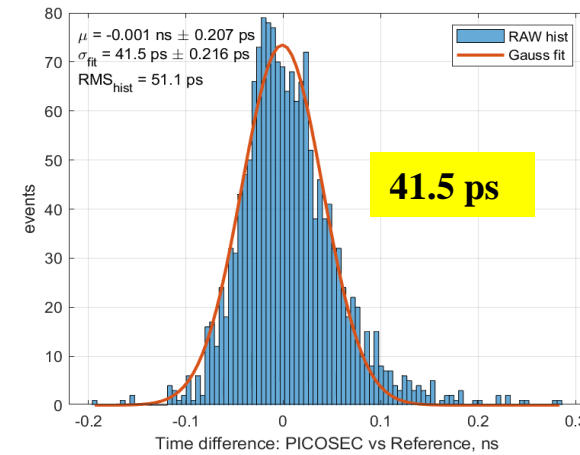
[https://www.eventclass.org/contxt\\_ieee2023/scientific/online-program/session?s=N-05#e1527](https://www.eventclass.org/contxt_ieee2023/scientific/online-program/session?s=N-05#e1527)

## Preparation for test beam in April-Mai 2024 @ CERN (DRD1 PICOSEC)

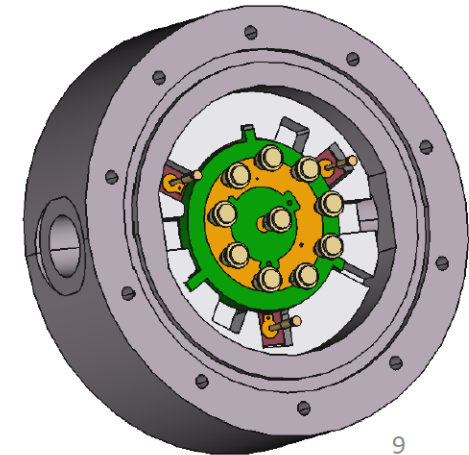
- ❖ Activities of last 3-months → preparing for April-May 2024 beam test at CERN
- ❖  $\mu$ RWELL-PICOSEC test beam telescope → test stand for up to 4 protos
- ❖ Acquisition of multi-channels fast electronics → Custom-made multi-channel pre-amplifiers + fast digitizer (SAMPIC) within the PICOSEC collaboration
- ❖ Reference timing (MOC-PMT) and tracking (3 GEM trackers)

## Anticipated challenges:

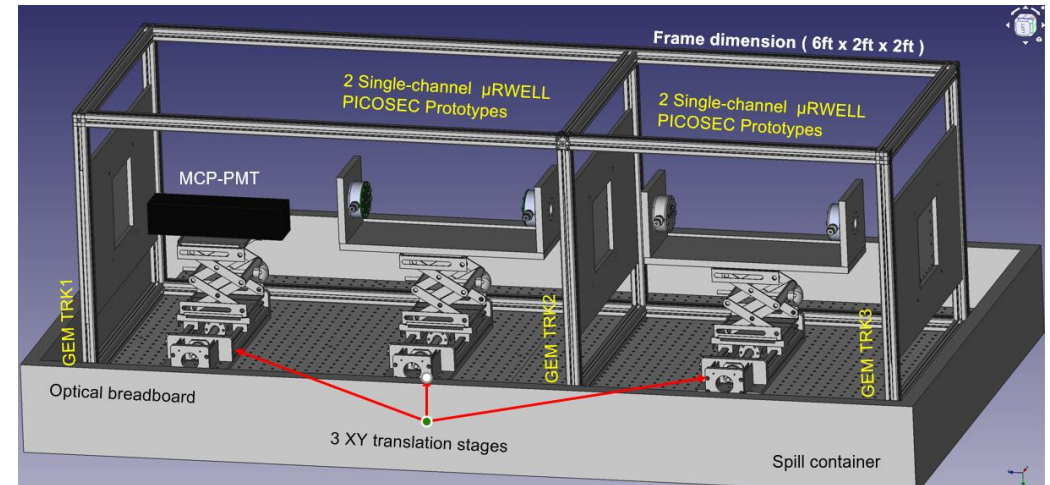
- ❖ Investigation of new photocathodes and Cerenkov crystal materials is on hold
- ❖ Setup of a characterization bench in EEL126 will be delayed → lack of funds



Performance of old prototype (FY23)



Design of new single-pad prototype



CAD design of the  $\mu$ RWELL-PICOSEC beam test telescope

# FY2413 $\mu$ RWELL-PICOSEC – Q1 Budget

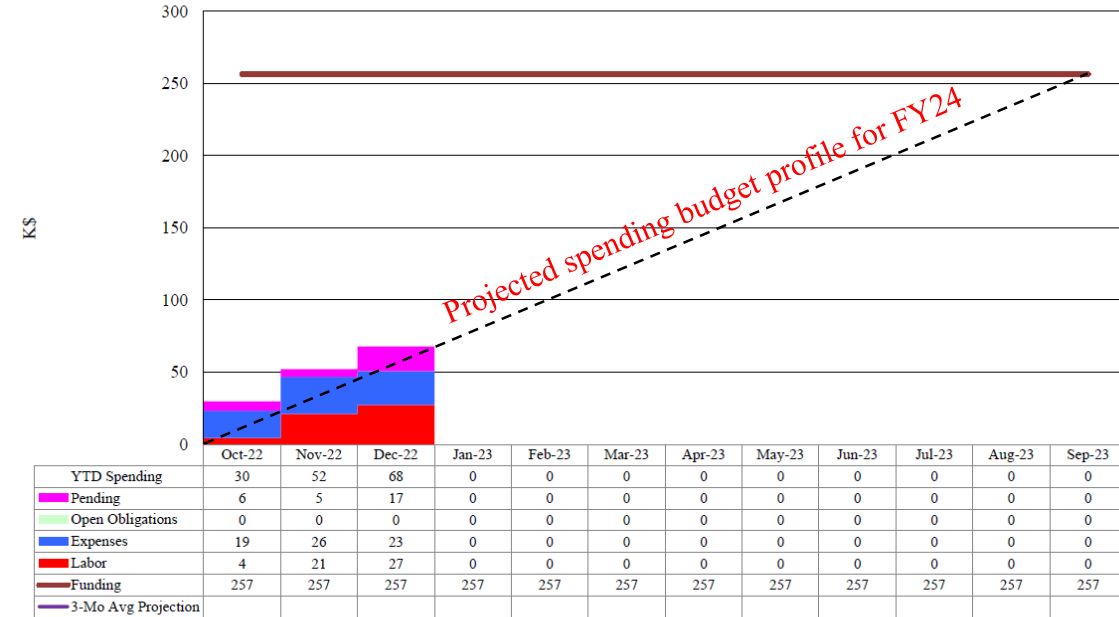
We are on part with the projected spending profile so far:

- ❖ Labor times report more systematically than for FY24 → full time post doc
- ❖ Procurement of parts → new prototypes and items for test beam telescope
- ❖ Pending spending → parts for telescopes and multi-channel readout

Variances anticipated:

- ❖ Unexpected expense: Relocation package for Dr Akash Pandey was budgeted for FY23 but occurred FY24 → Will impact part of the remaining program
  - ❖ The establishment of the PICOSEC test bench in EEL126 will be affected
- ❖ The investigation of new materials for photocathodes and optics for PICOSEC detectors is on pause → contribution from SBU. colleagues is on hold
- ❖ We have identify an alternative candidate for multi-channel readout system than the initial plan:
  - ❖ We are still developing the LM6881 + picoTDC readout + DAQ but the purchase of the picoTDC will be put in hold for now
  - ❖ Alternatively, we are purchasing a 70-channels custom made pre-amplifier + SAMPIC digitizer developed within PICOSEC collaboration and tested thoroughly with MM-PICOSEC

DEVELOPMENT OF LARGE AREA PICOSECOND TIMING BASED ON RESISTIVE MICRO-WELL DETECTOR ( $\mu$ RWELL-PICOSEC) FOR FUTURE EXPERIMENTS AT JEFFERSON LAB AND AT THE EIC  
K. GNANVO (LD2413)  
WBS 1.03.LD.011 (Loaded \$k)



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**Budget profile for the first three months of FY24**