

# ILC Beam dump experiment (H2)

D. Bozzato<sup>1</sup>, R. Froeschl<sup>1</sup>, H. Iwase<sup>2</sup>, T. Lorenzon<sup>1</sup>, N. Nakao<sup>3</sup>, F. Pozzi<sup>1</sup>, Y. Sakaki<sup>2</sup>,  
T. Sanami<sup>2</sup>, K. Sugihara<sup>2</sup>, M. Tisi<sup>1</sup>

<sup>1</sup> CERN HSE/RP-AS, <sup>2</sup> KEK (Japan), <sup>3</sup> Shimizu Corp.

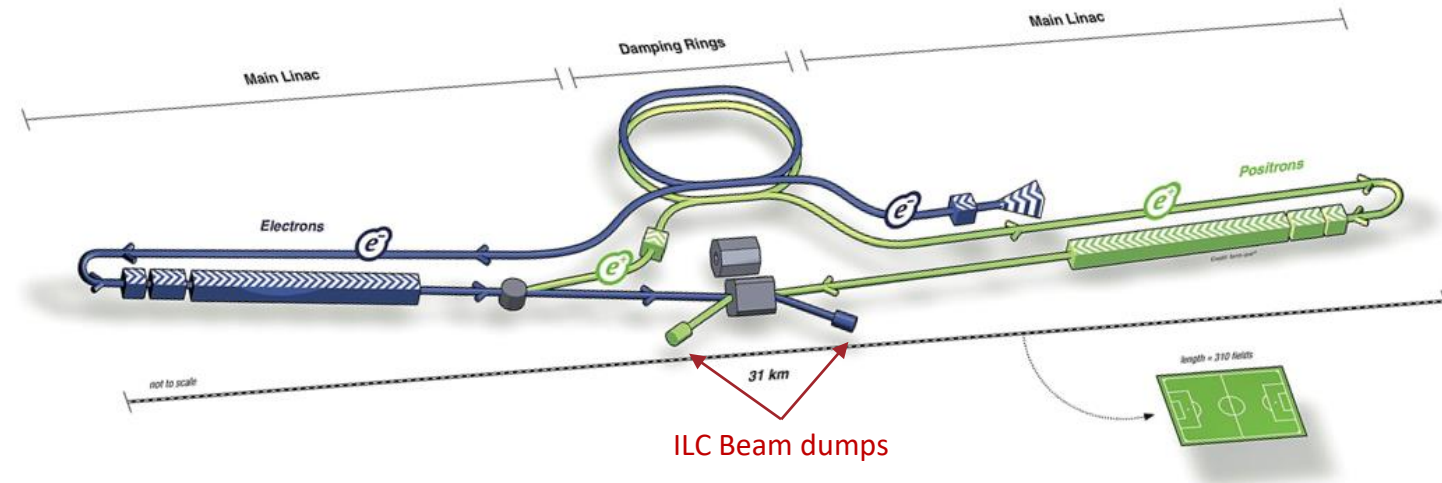
[PS/SPS User Meeting \(June 6, 2024\) · Indico \(cern.ch\)](#)

[EDMS 3103404](#)

06/06/2024



# Physics goal



## Context:

- Main beam dumps of **ILC (International Linear Collider)** have been proposed as **irradiation facilities** (Sakaki et al, NIMA 1050 (2023) 168144 <https://doi.org/10.1016/j.nima.2023.168144>)

## Goal of the present experimental activity:

- Obtain experimental benchmark data of **secondary particles** from ILC-like beam dump targets irradiated by multi-GeV  $e^-$  and  $e^+$  beams:
  - Forward  **$\mu$  pairs** produced from the interaction between  $e^+$  and atomic  $e^-$
  - **Neutrons**

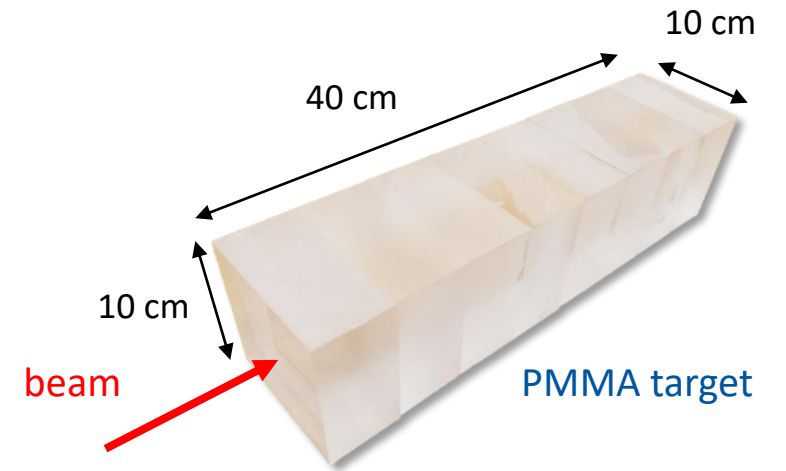
# Location and beam parameters

## Coordinates:

- PPE172, H2
- June 3-12, 2024 – beam time was extended to start earlier
- Control Room HNA383

## Beam parameters:

- **40 and 60 GeV/c**
  - e<sup>-</sup> and e<sup>+</sup>:  $10^5$  particles/spill
  - $\pi^-$  and  $\pi^+$   $< 10^5$  particles/spill (To subtract hadron contribution in e<sup>-</sup>/e<sup>+</sup> beams)
  - Issues in the target area with consequent reduction of maximum extraction momentum should not affect our activities.

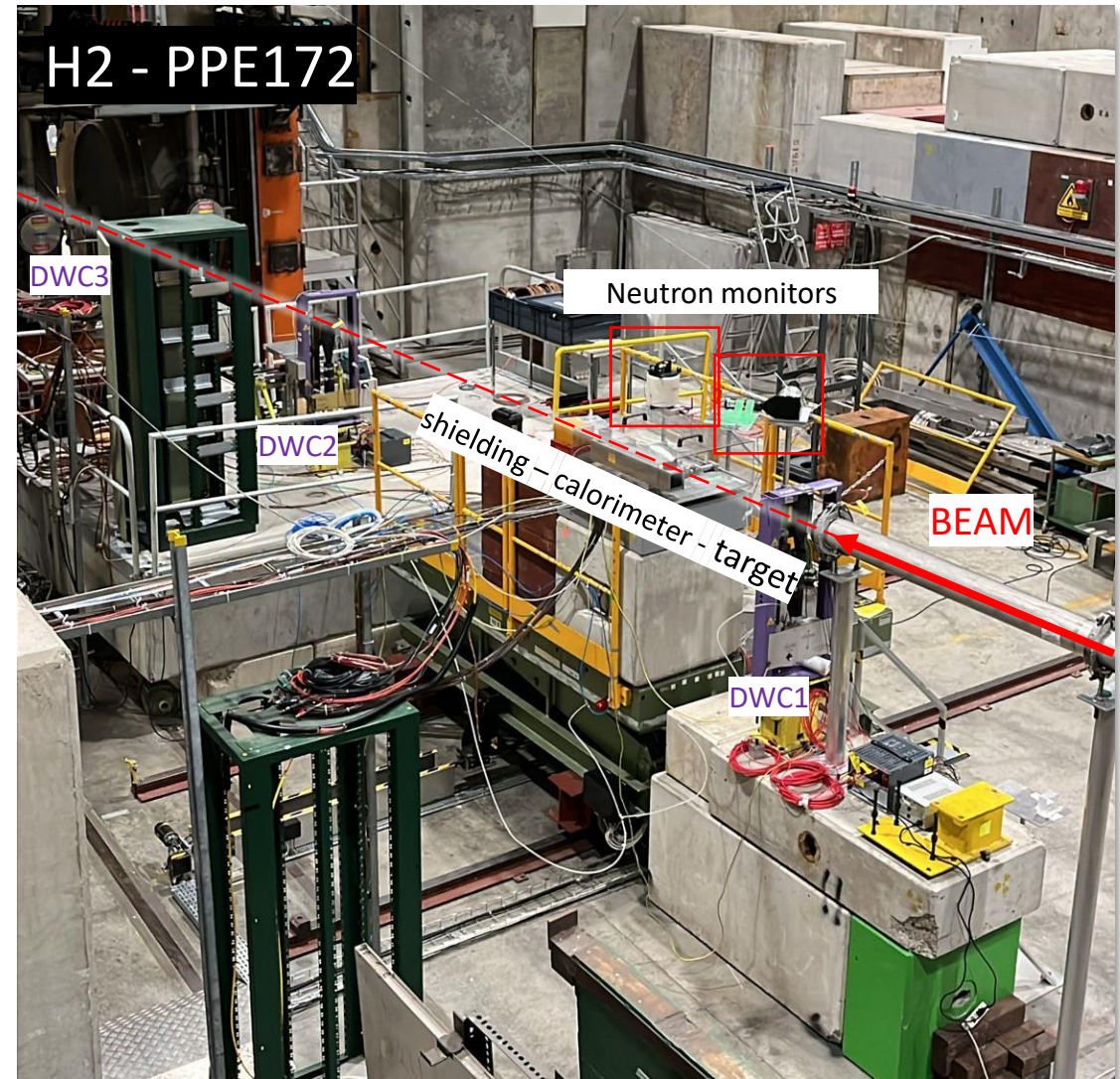


# Current status (1)

- **People**
  - All colleagues from Japan have arrived, last registration procedures were completed yesterday morning
- **Infrastructure and beam**
  - BE-EA installed DWCs, additional concrete blocks and calorimeter already last week
  - We were shown how to operate the movable tables/platform in PPE172
  - Many thanks to Michael and the BE-EA team for the prompt support!
  - Nikos prepared the beam files and showed us how to use them – Many thanks!
- **Experimental equipment**
  - All equipment has been installed in PPE172 and HNA383 from Monday to Wednesday
  - Many thanks to Dragoslav and Inaki for providing support with the setup of the DWCs (gas, voltage, connections, etc.)!
- **Safety inspection**
  - Carried out on Wednesday mid afternoon --> recommendations were implemented --> got safety clearance.
  - Many thanks to James for the availability!

# Current status (2)

- **Next steps**
  - Alignment of equipment with respect to the beam
  - Manual placement of the PMMA target
  - Start of first tests and experimental activities (afternoon?)

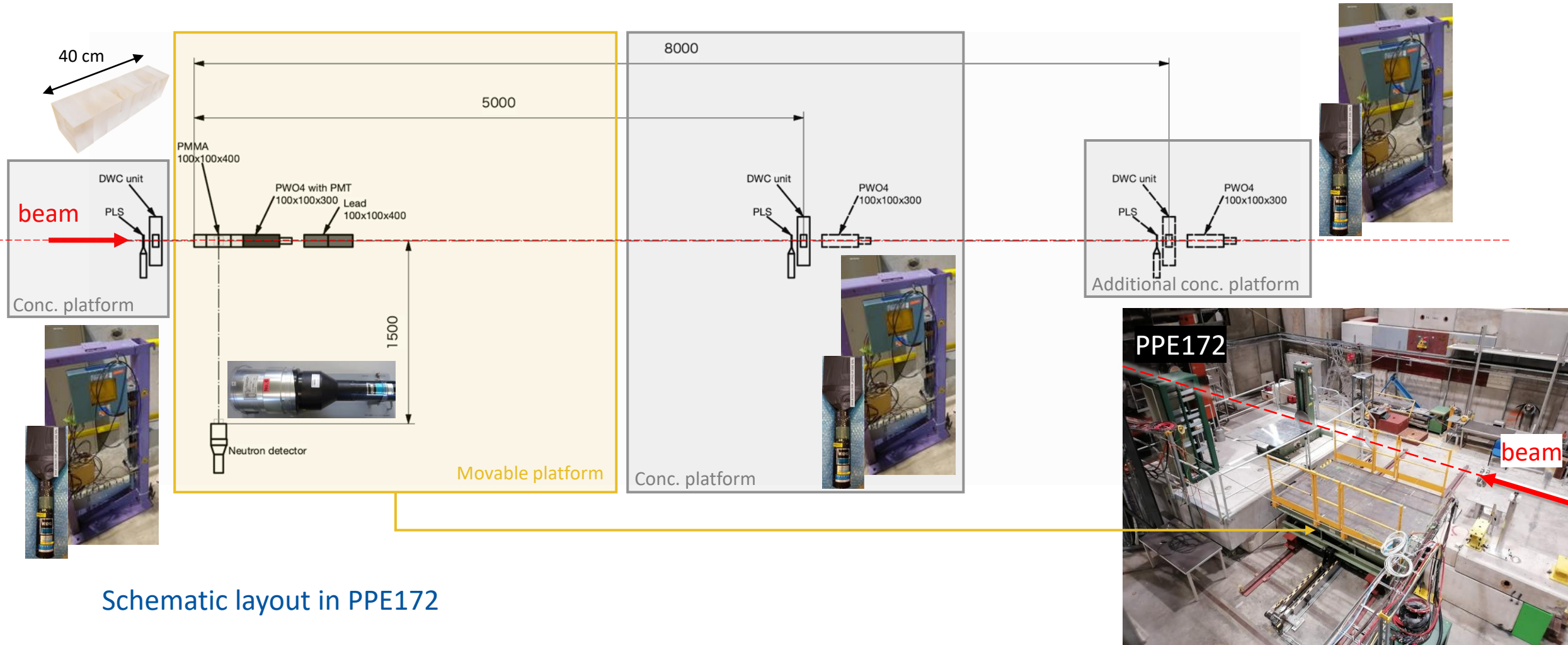




[marco.tisi@cern.ch](mailto:marco.tisi@cern.ch)

[EDMS 3103404](#)

# beam parameters and installation (2)



Schematic layout in PPE172