

Activities in Japan and Taiwan

WP7B meeting in the 2nd DRD1 Collaboration Meeting

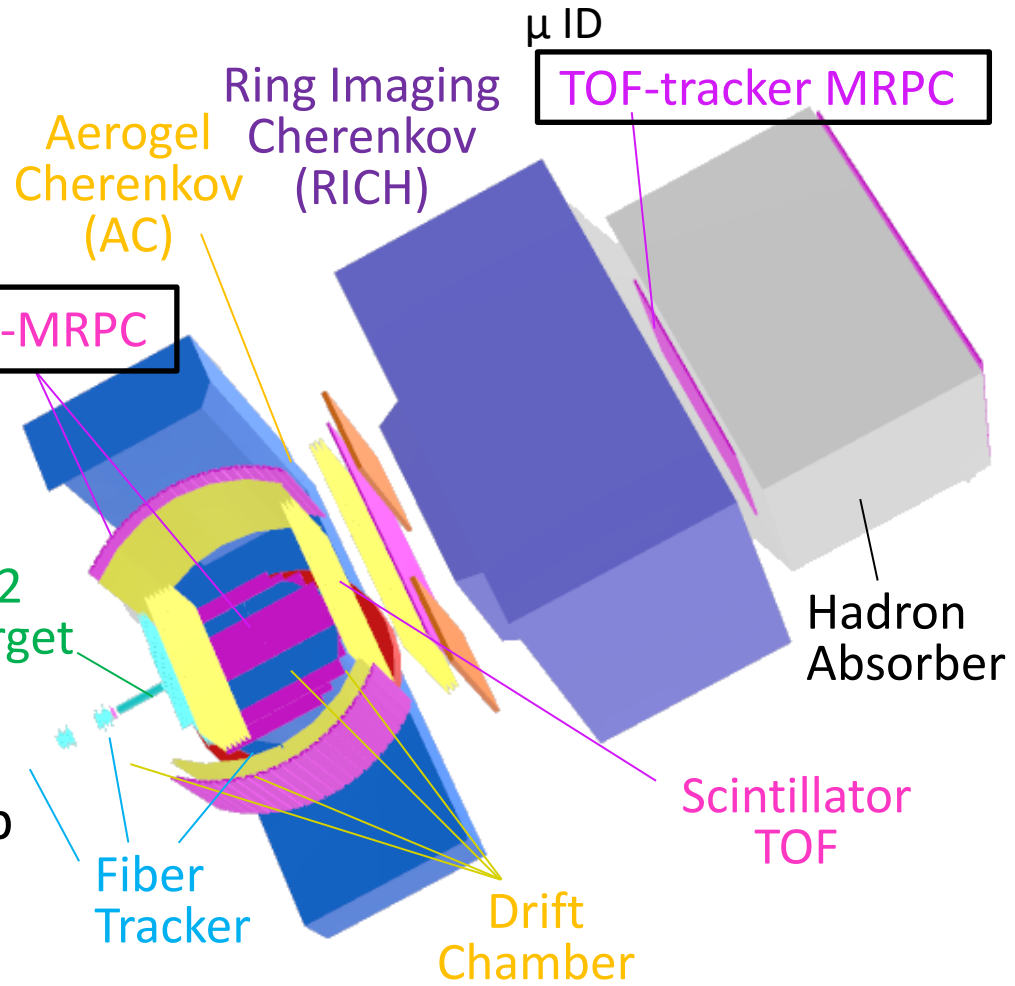
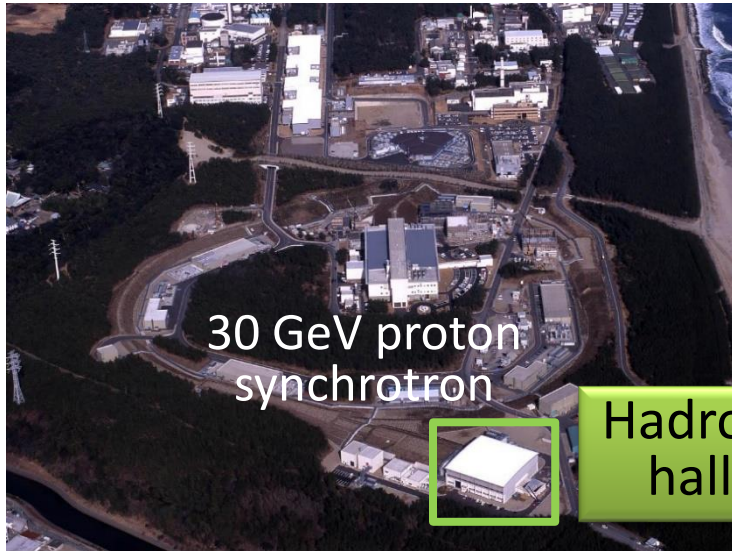
2024/6/17

Natsuki TOMIDA (Kyoto Univ., Japan)

J-PARC / $\pi 20$ beamline

J-PARC

MARQ spectrometer @ $\pi 20$ beamline



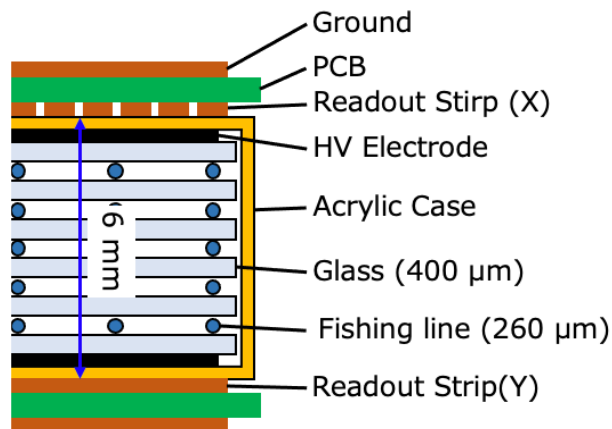
$\pi 20$ beamline

- Future planned beamline
- 2-20 GeV positive/negative $\pi/K/p$
- Hadron spectroscopy
- Nucleon Structure

Goal: • TOF-RPC : 1.6 m in length, 60 ps

- tracker-RPC : 1.8 m x 2.4 m, 100 ps, 1 mm resolution

TOF-tracker MRPC Prototype

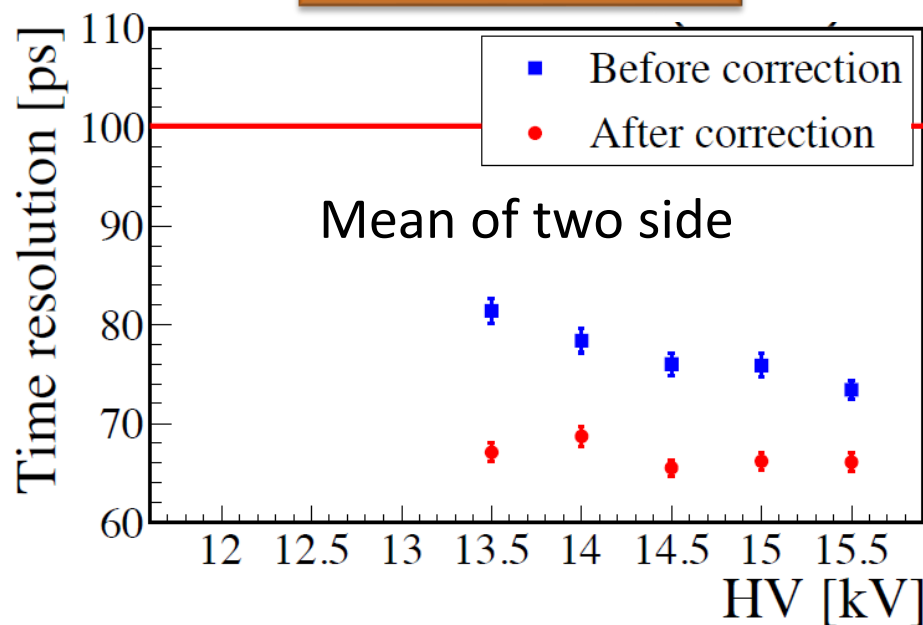


- 1.0 m × 0.5 m
- 260 μm x 5 gaps
- 5 mm pitch, 1.35 mm wide strips
- 0.5 m X strip, 1.0 m Y strip
- Time-Over-Threshold

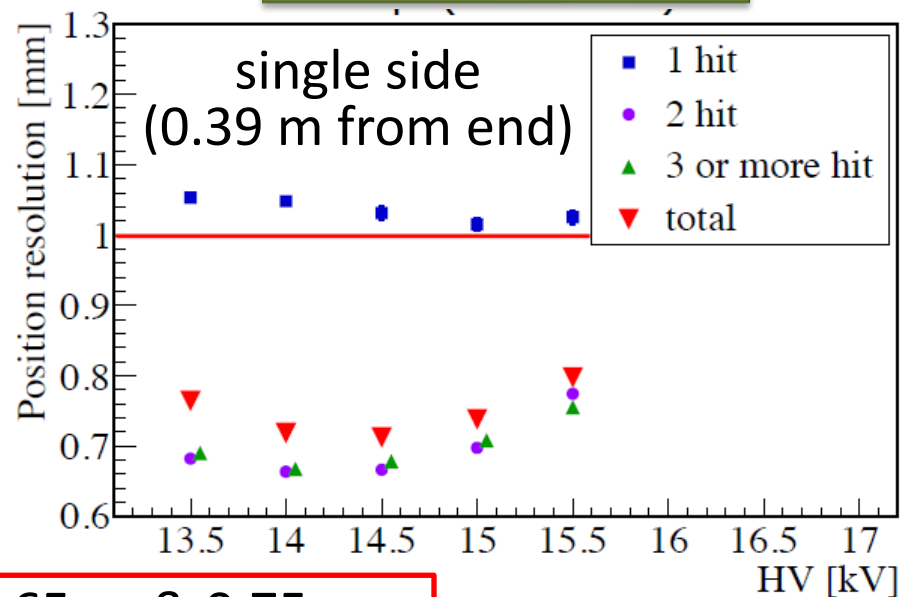
Performance of X strip (0.5 m long)

2023 beam test

Time resolution



Position resolution



65 ps & 0.75 mm

FY2024-

2024-2028 : JST K program
“Development of TOF-tracker
MRPCs for volcano muon
tomography”

1M\$ project starts in Aug



Kyoto University (Japan)

RCNP, Osaka University (Japan)

Kyoto Sangyo University (Japan)

Academia Sinica (Taiwan)

National Central University (Taiwan)

Lyon University (France)

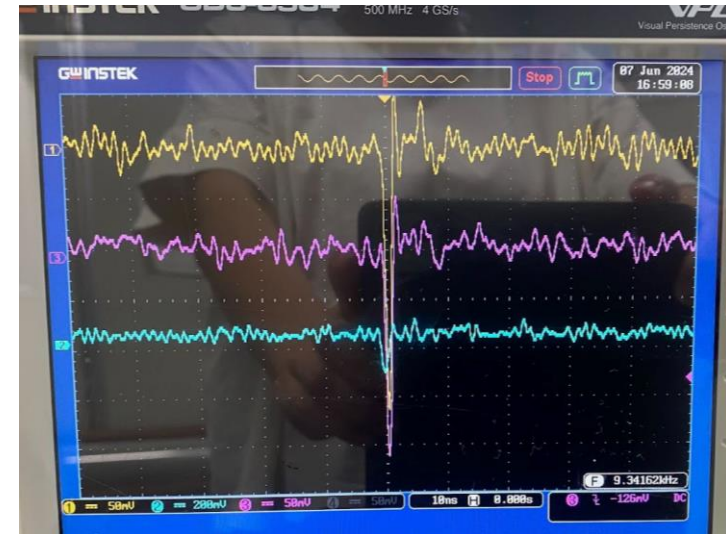
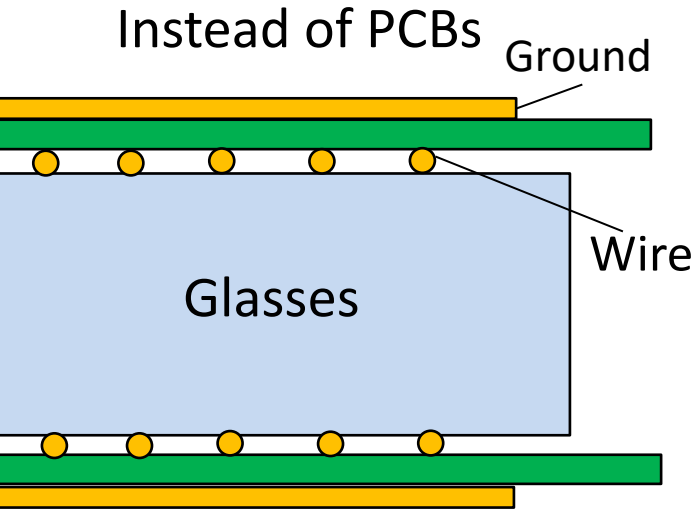
IP2I (France)

FEEs, carbon-less, spacers, gas tight
-> Chia-Yu's presentation

FJPPN program

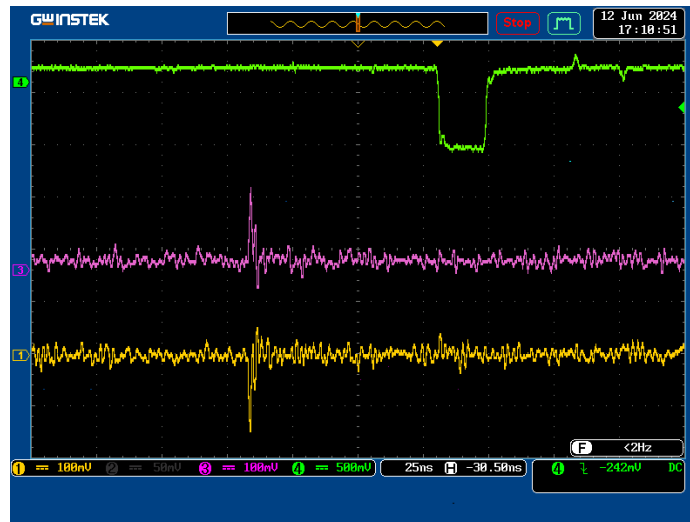
Recent work

Wire readout



Polymer HV electrode

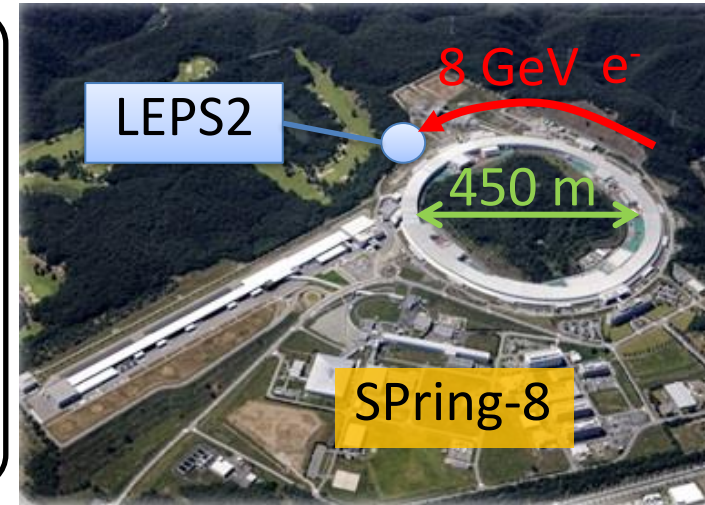
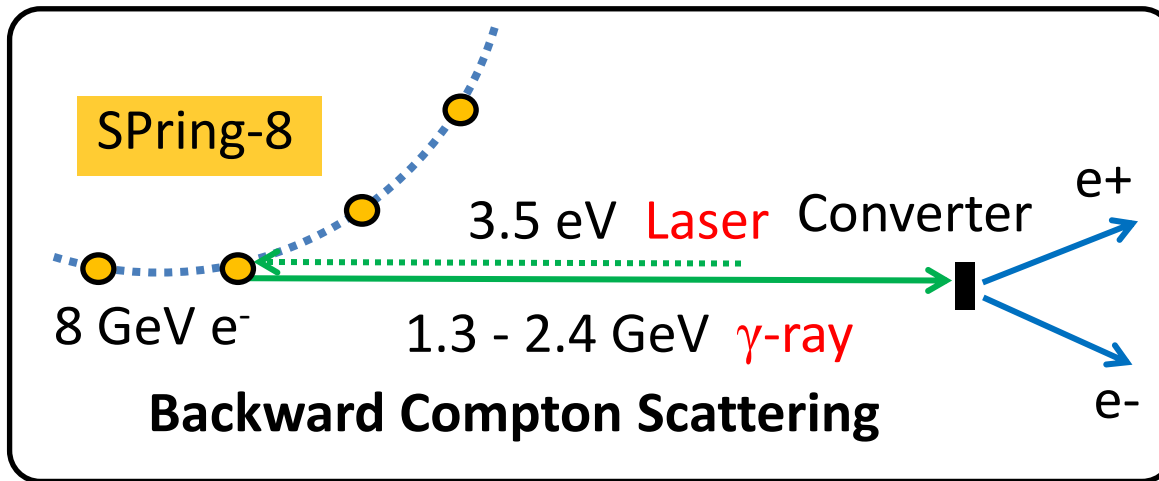
Instead of graphite



beam test in July

Test Facility

- LEPS2 beam line in SPring-8 Japan
- Private beam line of RCNP/Osaka University
- Beam available ~ 200 days/year
- Applications for test experiments are welcome



- SPring-8 electron bunch width : $\sim 14 \text{ ps}$
 - \Rightarrow TOF measurement using the RF signal of e^- storage ring as a START timing
 - \Rightarrow TOF start timing can be defined with $\sim 14 \text{ ps}$ time resolution

Suited for TOF detector tests

- $\sim \text{MHz } \gamma$ beam

Announcement from RPC2024 IOC



Sep 9 – 13, 2024

Europe/Madrid timezone

<https://indico.cern.ch/event/1354736/>

- Abstract submission deadline extended to Jul/1
- Please submit your abstract as soon as possible
- Contributions submitted before original deadline (Jun/1) were already accepted/rejected
- Please reserve your hotel as soon as possible