Upgrade of the Beam Monitor System for Hadron Experimental Facility at J-PARC
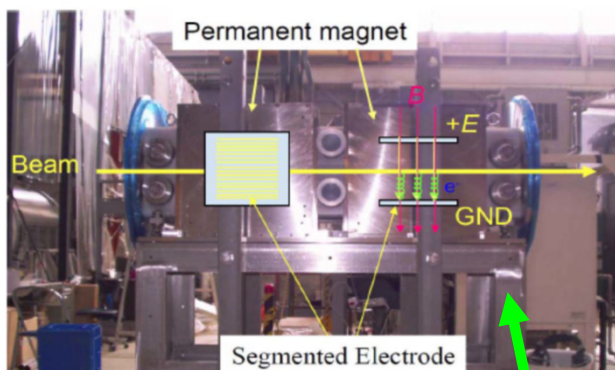
Y.Morino, K.Agari, Y.Sato, A.Toyoda
KEK

MOM309

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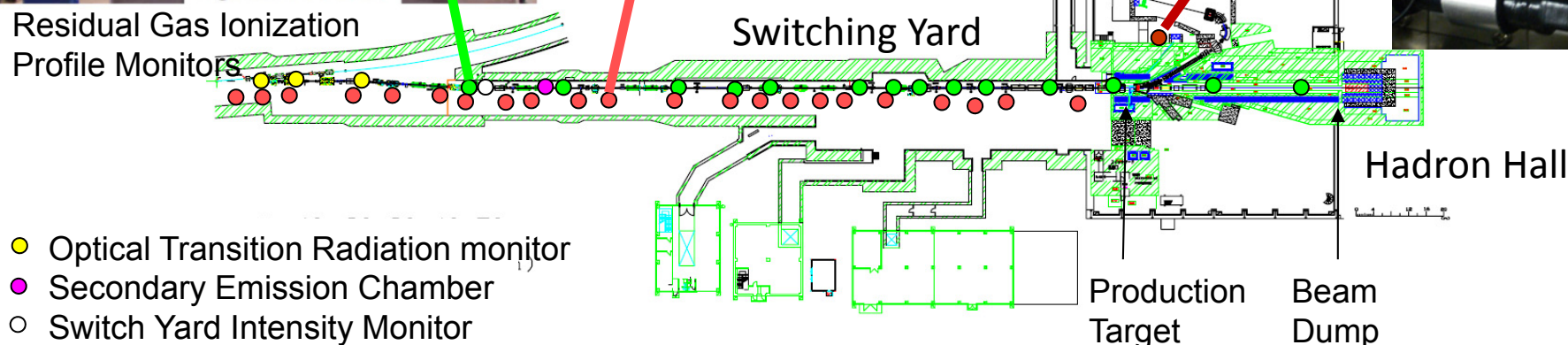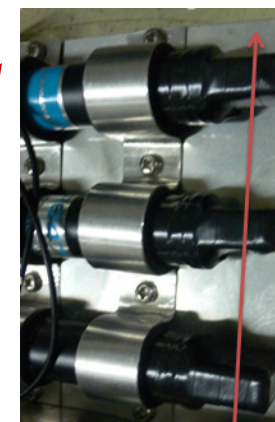## International Conference on Accelerator & Large Experimental Physics Control Systems

● Beam Profile Monitor

● Beam Loss Monitor

●Rate Monitor

Permanent magnet

Beam

+E

GND

Segmented Electrode

Residual Gas Ionization
Profile Monitors

Air Ionization Chamber

Switching Yard

Hadron Hall

○ Optical Transition Radiation monitor
● Secondary Emission Chamber
○ Switch Yard Intensity Monitor

Production
Target

Beam
Dump

- Detect abnormal beam extraction
→ Generate interlock signal & Stop the next beam extraction
- Protect the machines

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Beam Profile Monitor **Beam Loss Monitor** **Rate Monitor**

before::readout after beam spill

↓

readout 8 times
during beam spill

→ Detection short
time narrow width

~10kHz readout
(5Hz online monitor)

→ Detection large
beam loss immediately
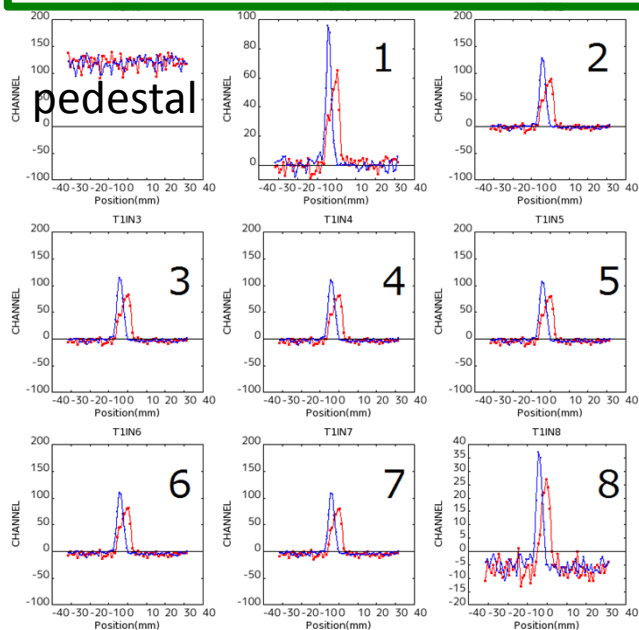
~1kHz readout

→ Detection a short
pulse beam

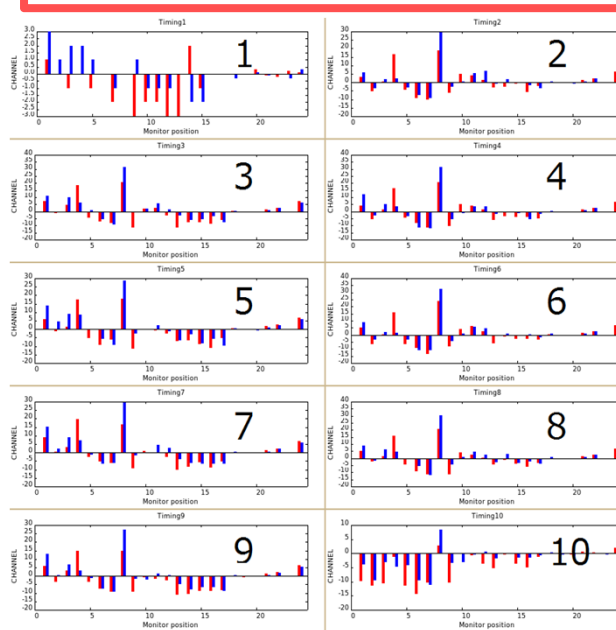- Upgrade Readout & Interlock System of Monitors

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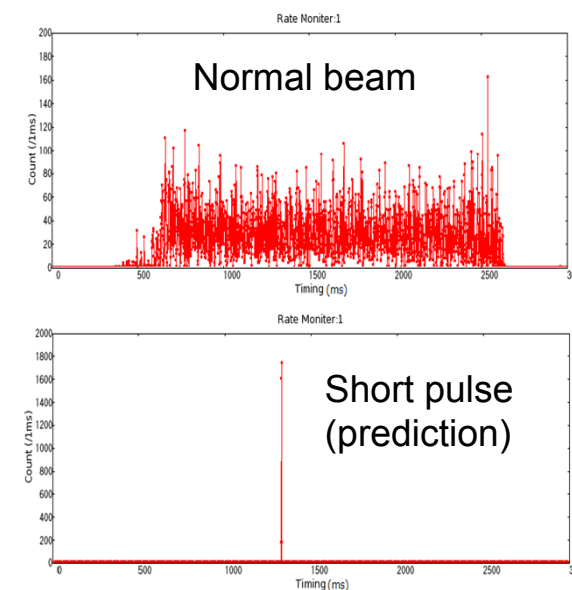International Conference on Accelerator & Large Experimental Physics Control Systems

Beam Profile Monitor

Beam Loss Monitor

Rate Monitor

- The upgraded monitor system worked from Apr 2015.
- Abnormal beam extraction can be detected immediately.
→A new interlock system can abort the abnormal beam even during extraction. (from Oct 2015)