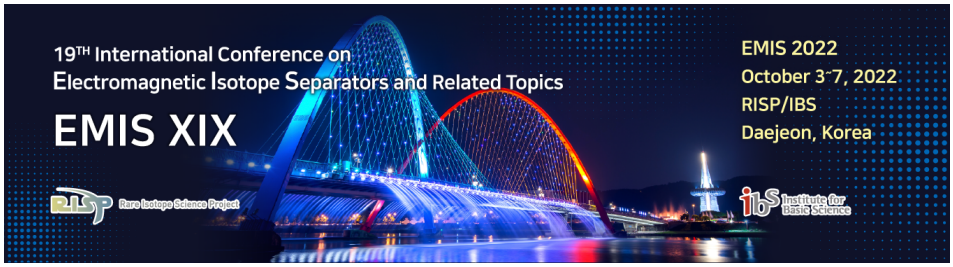

Contribution ID: **65** Type: **Poster Session**

Development of a fast response PPAC for high-intensity heavy-ion beams

Tuesday, 4 October 2022 19:20 (8 minutes)

Parallel Plate Avalanche Counter (PPAC) is generally used as beam-line detectors for position measurements in RI beam facilities. A delay-line PPAC, a conventional type of PPAC deduces the position of particles using the time difference of signals from both ends of electrodes connecting a delay line. However, there is a limit on the counting rates due to the multi-hitting within the delay time. We have developed a Strip-Readout PPAC (SR-PPAC) with two cathode planes for positions X and Y with strip electrodes. By separately reading out from each electrode detection efficiency has been achieved near 100 % even for high-intensity beams much more than 10^5 cps.

We have tested SR-PPAC in accelerator facilities and evaluated the detection efficiency and the position resolution. The detection efficiency was more than 99% even for a 700 kHz RI beam and the position resolution achieved about 300 μm(FWHM), which is comparable to Multi-Wire Drift Chamber.

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Session Classification: Poster Session