

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Two-dimensional position sensitive ionization chamber with GEM NORITAKA KITAMURA, TETSUO NORO, SATOSHI SAKAGUCHI, HIDEAKI TAKAO, YASUTAKA NISHIO, Kyushu University — We have been developing a multi-anode ionization chamber for Accelerator Mass Spectrometry (AMS) at Kyushu University. Furthermore, we are planning to construct a neutron detector with high position resolution by combining the chamber with Gas Electron Multiplier (GEM) and a neutron converter. One of purposes is the measurement of (\vec{p}, pn) knockout reaction from unstable nuclei. The multi-anode ionization chamber is composed of subdivided multiple anodes, a cathode to produce an uniform electric field, and a Frisch grid. The chamber must have position sensitivity because obtaining a beam profile is required for AMS measurements, where counting loss should be avoided. Also in the case of the neutron detector, it is necessary to measure the position to deduce the scattering angles. We have recently established a two-dimensional position readout system by the following methods: the measurement of horizontal position is enabled by trimming some anodes into wedge-like shape, and vertical position can be determined by the ratio of induced charge on the grid to the total charge on anodes. In addition, improvement of S/N ratio is important for isotope separation and position resolution. We installed a rectangular-shaped GEM and tried improving S/N ratio by electron amplification.

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Date submitted: 24 Jun 2014

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