

Development of the gaseous Xe scintillation detector for the particle identification of high intensity and heavy RI beams

For the experiments of unstable nuclei, the cocktail RI beams produced by the fragmentation of HI beams are often used. It is necessary to identify the RI beam event by event RIBF can provide the high intense RI beam, but we cannot fully utilize it due to the radiation damages of the existing detectors for the particle identification. To get enough data efficiently in a limited time, we need new detectors which have a good radiation hardness, a fast timing response, and a good energy and timing resolution.

For this purpose, we have developed a new detector employing the scintillation of the gaseous Xe. Since Xe gas is known to have a small work function, a high energy resolution is expected. However, the scintillation properties of the gaseous Xe from high-energy and -intensity HI particles not fully understood so far.

In order to evaluate the performance of the gaseous Xe scintillation detector, we tested it with a primary beam of ^{132}Xe 290MeV/u and a secondary beam of $A/Z \sim 2.28$ at 300MeV/u produced by ^{132}Xe 400MeV/u at Heavy Ion Medical Accelerator in Chiba in Nov.2017. I will report the result of this experiment in this conference.

Summary

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