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Developments of Radioactive Isotope Beams using Long-Lived Nuclides from Accelerator Mass Spectrometry System

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Accelerator Mass Spectrometry (AMS) can detect extremely small amounts of long-lived nuclides (^{10}Be, ^{14}C, ^{36}Cl, ^{129}I, etc.) in sample. It is applied for studies of environmental dynamics using seawater or rainwater, cosmic ray event exploration using Antarctic ice core and so on.
We have been developing RI beams using long-lived nuclides provided from the AMS system at the University of Tsukuba Tandem Accelerator Complex (UTTAC) for experiments of nuclear physics.
We developed ^{10}Be and ^{14}C beams. In the AMS, an ionization chamber (IC) is used to count the number of rare isotopes, and an absorber gas is used to remove isobaric interferences. Considering the use of the beam for nuclear physics, it is desirable to minimize the energy loss and maintain the beam energy as much as possible. Therefore, we investigated the response of the gas detector when the gas pressure of the P10 gas in the IC, and the argon gas in the absorber cell were reduced. We also examined the beam size. The count rate is also important for beam utilization, and we are trying to improve the isotope ratio of ^{10}Be by preparing samples with rainwater.

Research field of your presentation

Experimental Low-energy nuclear physics

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