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Recent results on low-pressure Time Projection Chamber for Accelerator Mass Spectrometry

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Recent results on a new ion identification technique for Accelerator Mass Spectrometry (AMS), based on measuring the ion track ranges in low-pressure TPC, are presented. As a proof of principle, a low-pressure TPC with THGEM-based charge readout has been recently developed. In this work we developed a new, larger version of the TPC, with a dedicated thin silicon nitride window for efficient passage of ions. The THGEM gain was measured and the improved resolution for measuring the track ranges of alpha particles was obtained at the nominal TPC pressure (50 Torr). Using these results and SRIM code simulations, it is shown that isobaric boron and beryllium ions can be effectively separated at AMS. This technique will be applied in the AMS facility in Novosibirsk for dating geological objects, namely for geochronology of Cenozoic era.

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