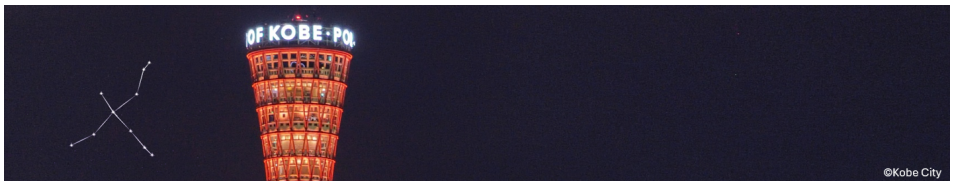

Contribution ID: **1** Type: **not specified**

Development of an Optical TPC with GEM and CMOS Sensors for Surface Alpha Measurements

Tuesday, 24 February 2026 16:22 (1 minute)

In underground astroparticle experiments, radioactive impurities contained in detector materials should be reduced to extremely low levels. This study focuses on the analysis of alpha particles originating from material surfaces. We have been developing a time projection chamber (TPC) dedicated to detecting alpha-particle tracks from material surfaces. The TPC employs an optical readout system that directly images GEM-induced scintillation in CF_4 gas using a CMOS camera. Timing information from a GEM–PMT system is combined with spatial information obtained from the CMOS images to enable three-dimensional reconstruction of particle tracks. This poster presents the detector configuration, including the optical system, initial results of GEM scintillation imaging, and prospects for track reconstruction and particle identification.

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