The Gamma-Ray and AntiMatter Survey (GRAMS) targets spectroscopic imaging of cosmic MeV gamma rays and indirect dark-matter searches. GRAMS employs a liquid-argon time projection chamber (LArTPC) operated as a Compton camera. At Osaka University, we are developing a small LArTPC prototype, NanoGRAMS (5 × 5 × 10 cm^3 active volume), to demonstrate this concept. Scintillation light is detected by a SiPM array (Hamamatsu S13360-6075), and ionization electrons drift to a pixelated anode read out by low-noise VATA-SGD ASICs (180 e^- at 6 pF input capacitance).

To reconstruct the three-dimensional interaction positions, we developed FPGA logic that detects the light trigger issued by the waveform digitizer and synchronizes it with the VATA-SGD charge readout. The hit pixels provide the transverse coordinates, and the light-charge time difference measured by the FPGA provides the interaction depth.

We report measurements with a ^{22}Na source placed on the detector axis (0°) and at 45° to that axis. The measured energy spectra show Compton edges corresponding to incident gamma-ray energies of 511 keV and 1.274 MeV. We reconstructed Compton images for both source orientations using two-hit events associated with the 1.274 MeV gamma-ray line. The reconstructed image shifted in a manner consistent with the change in source direction.