Contribution ID: **162** Type: **Contributed talk**

Development of the COREA detector system for the measurement of the $^{12}C(\alpha,\gamma)^{16}O$ reactions

Wednesday 18 September 2024 12:25 (15 minutes)

We have developed a compact detector system that utilizes an active-target TPC (Time Projection Chamber) to measure the $^{12}C(\alpha,\gamma)^{16}O$ reaction. This system includes a 3-T superconducting magnet, a low-pressure He-gas TPC, and a $LaBr_3$(Ce) detector array. The proposed experiment, called COREA (Carbon Oxygen Reaction Experiment with Active-target TPC) experiment, will take place at the BIBA heavy-ion accelerator facility in Korea. The TPC has triple GEM (Gas Electron Multiplier) and gating GEM layers. It has a readout plane that covers an area of 10×10 cm^2 and contains 1000 3×3 mm^2 square pads. The TPC uses a gate operation and an opaque part of the gating GEM layer to block the beam-associated signal amplification. The gamma-ray detector array comprises 16 cylindrical $LaBr_3$(Ce) detectors, each with a 50 mm diameter and 75 mm long crystal. We have tested the TPC and $LaBr_3$(Ce) array using radioactive sources and ion beams from the KIST tandem accelerator facility. This presentation will give an update on the current status of the COREA experiment and showcase the performance of the unique COREA detector system.

Primary author: AHN, Jung Keun (Korea University)

Co-author: Ms LEE, Haein (Korea University)

Presenter: AHN, Jung Keun (Korea University)

Session Classification: Plenary Session