Contribution ID: **154** Type: **Poster contribution**

Inelastic scattering and gamma decay coincidence measurement, and future plan of streaming DAQ at RCNP

The inelastic scattering and gamma decay coincidence measurement, e.g., $(p,p'\gamma)$ and $(\alpha,\alpha'\gamma)$, is a great tool to study nuclear structures. In order to realize the measurement, we performed campaign-type experiments using high-resolution spectrometer Grand Raiden and Germanium detector array CAGRA at Research Center for Nuclear Physics (RCNP), Osaka University in Japan. CAGRA stands for Clover Array Gamma-ray spectrometer at RCNP/RIBF for Advanced research, and the array was constituted by 12 clovers borrowed from Argonne National Laboratory in the US, the Army Research Laboratory in the US, the Institute of Modern Physics in China, and Tohoku University in Japan.

The readout system of CAGRA consisted of electronics including the ANL digitizer modules, which were developed for the readout of the GRETINA/GRETA tracking detector array. On the other hand, we are investigating other options to purchase or develop digitizers, which should be suited for our newly developed streaming DAQ system.

In the presentation, we will show preliminary results of the Pb$(p,p'\gamma)$ reaction at E_p = 80 MeV and other results from the CAGRA+GR campaign collaboration. In addition, we will discuss the previous and future DAQ systems at RCNP.

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Classification

Instrumentation for radioactive ion beam experiments

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Track Classification: Instrumentation for radioactive ion beam experiments