Abstract

The PANDORA (Photo-Absorption of Nuclei and Decay Observation for Reactions in Astrophysics) project is dedicated to both experimental and theoretical analysis of photo-nuclear reactions involving light nuclei with a mass below $A = 60$. This research is particularly significant in the context of ultra-high-energy cosmic ray (UHECR) investigations, where the primary mode of energy attenuation is determined by the electromagnetic interaction of the nucleus with the cosmic microwave background through the isovector giant dipole resonance (IVGDR). Currently, propagation calculations and reaction models face challenges due to a lack of reliable experimental data sets for crucial nuclei. Results on ^{12}C and ^{13}C from an experiment conducted at the Research Center for Nuclear Physics (RCNP), Japan, using the virtual photon method on (p,p') inelastic scattering reactions at 392 MeV experiment are presented. as well as improvements to the experimental method implemented during the second experiment. Finally, some implictations from the ^{12}C and ^{13}C for UHECR propagation will be presented.