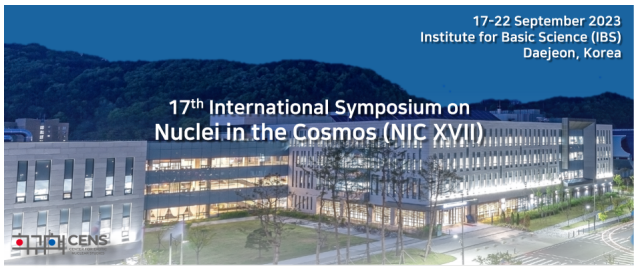

Contribution ID: **62** Type: **Poster**

Study of the $^{60}Ga(\beta^+)^{60}Zn$ decay of for the Astrophysical rp process

Tuesday, 19 September 2023 17:00 (5 minutes)

One of the goals of nuclear astrophysics is to understand the various astrophysical events occurring in the cosmos.
The most common stellar explosions observed in our galaxy are Type I X-ray bursts (XRB1).
The isotopic abundances obtained from the astrophysical models of XRB1 depend strongly on a number of nuclear reaction rates, occurring both on the surface and inside the crust by the buried ashes.
The nuclear burning that creates these ashes is called the rapid proton (rp) capture process.
Investigating the rp process enhances our understanding of the dynamics of neutron stars and features of XRB1 spectra.
The nuclear reaction flow of the rp process is sensitive to the $\beta+$ decay properties of the nuclei involved, and the experimental study of such properties is of significant importance.
In this study, total absorption spectroscopy (TAS) analysis was performed for the $^{60}Ga(\beta+)^{60}Zn$ decay.
This experiment was performed at the National Superconducting Cyclotron Laboratory (NSCL).
In this presentation, the extracted beta feeding intensity will be discussed, along with a comparison to theoretical shell model and QRPA calculations.

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Session Classification: Poster session (Novae and X-ray bursts, Type IA supernova and the p-process)

Track Classification: Novae and X-ray bursts