

ELITPC - an active target TPC for studying nuclear reactions at astrophysical energies

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Determining the ratio of carbon-to-oxygen produced at the end of the helium burning in stars is a paramount importance problem for nuclear astrophysics. In recent years, the advent of high-intensity γ -ray beams opened a new opportunity to study the $^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ reaction regulating the ration by investigating the time-reversal photodisintegration reaction.

To take advantage of this approach an active-target Time Projection Chamber with electronic readout is being developed at the University of Warsaw, Poland. The $^{16}\text{O}(\alpha,\gamma)^{12}\text{C}$ reaction will be studied in an experiment with the gamma-ray beam provided by the High Intensity Gamma-Ray Source (HI γ S), USA, and in Day-1 experiments at the Extreme Light Infrastructure Nuclear Physics (ELI-NP), Romania.

During the presentation, I will discuss the challenges we have faced and the solutions we adopted for detector design. I will also outline the present problems and plans for future.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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