

On the measurements of the beam characteristics of the JUNA 400 kV accelerator and $^{14}\text{N}(p,\gamma)^{15}\text{O}$ reaction

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Jinping Underground laboratory for Nuclear Astrophysics (JUNA) is one of the major research programs in China Jinping underground Laboratory (CJPL). To study key nuclear reactions in astrophysics, a new 400 kV accelerator, with high stability and high intensity, has already been constructed by CIAE and IMP in 2017 and will be installed into CJPL in 2019.

Currently, the beam characteristics of the JUNA 400 kV accelerator, like absolute energy, energy spread and long-term energy stability, are measured by the resonance reactions of $^{25}\text{Mg}(p,\gamma)^{26}\text{Al}$, $^{26}\text{Mg}(p,\gamma)^{27}\text{Al}$ and $^{27}\text{Al}(p,\gamma)^{28}\text{Si}$, and non-resonance $^{12}\text{C}(p,\gamma)^{13}\text{N}$. The $^{14}\text{N}(p,\gamma)^{15}\text{O}$ reaction will also be studied near Gamow energy in JUNA project. The results of beam characteristics and the progress of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ reaction will be presented.

