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Underground Measurements of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ and Other Key Reactions for Nuclear Astrophysics

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The LUNA (Laboratory for Nuclear Astrophysics) collaboration has a long and successful history in measuring the cross sections of astrophysically important reactions in a deep underground location at LNGS, Italy. In addition to the very prolific LUNA-II 400 keV accelerator, the collaboration has an extensive program on the recently launched Bellotti Ion Beam Facility (BIBF), which is based on a 3.5 MeV accelerator at LNGS.

The first completed experimental campaign at BIBF was the study of $^{14}\text{N}(p,\gamma)^{15}\text{O}$, the key reaction of the CNO cycle hydrogen burning. In this talk, the experimental methods and some preliminary results of the $^{14}\text{N}(p,\gamma)^{15}\text{O}$ cross section measurement will be presented. In addition, some recent results and ongoing activities of the LUNA collaboration will also be advertised shortly.

Author: GYÜRKY, Gy. (HUN-REN Institute for Nuclear Research (ATOMKI))

Presenter: GYÜRKY, Gy. (HUN-REN Institute for Nuclear Research (ATOMKI))

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