

## Germanium-detector based study of the $^2\text{H}(p,\gamma)^3\text{He}$ cross section at LUNA

*Tuesday, 26 June 2018 19:00 (1h 30m)*

Recent, precise measurements of the primordial  $^2\text{H}$  abundance [1] have opened the possibility to precisely determine of the primordial baryon-to-photon ratio, independent from the cosmic microwave background. For their interpretation, the  $^2\text{H}$  abundance data require equally precise nuclear data, in particular on the  $^2\text{H}(p,\gamma)^3\text{He}$  reaction.

Deep underground in the Gran Sasso laboratory, Italy, the LUNA collaboration is undertaking a dedicated effort to measure the  $^2\text{H}(p,\gamma)^3\text{He}$  cross section directly in the Big Bang energy window of interest. The campaign is divided in two phases based on a BGO and a high-purity germanium (HPGe) detector, respectively. The present poster will report on the second, HPGe-based phase of the experiment. Due to the Doppler shift of the emitted  $\gamma$ -rays, in addition to the absolute yield also information on the  $\gamma$ -ray angular distribution, thus reducing the systematic uncertainty. The characterization and calibration of the setup and detectors, background conditions, and potential sources of uncertainty will be discussed.

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