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New direct measurement of the 6Li(p,gamma)7Be cross section at LUNA

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The ^{6}Li(p,γ)^{7}Be reaction is involved in many astrophysical scenario, ranging from Big Bang Nucleosynthesis to pre-main sequence stellar evolution and solar neutrino.
At astrophysical energies, proton capture on ^{6}Li proceeds through the ^{6}Li(p,α)^{3}He and the ^{6}Li(p,γ)^{7}Be reactions.
The ^{6}Li(p,α)^{3}He cross section is well known from the literature, but the measured angular distribution can only be explained introducing positive parity excited states of ^{7}Be in addition to the known negative parity levels.
Although the existence of positive parity excited states in ^{7}Be has never been confirmed experimentally, a recent measurement of the ^{6}Li(p,γ)^{7}Be cross section revealed a resonance-like structure at center of mass energy of 195 keV. The observed S-factor could be reproduced introducing a new ^{7}Be excited state with E $\approx$ 5800 keV and J^{π} = ($1/2^{+}$, $3/2^{+}$).
The existence of such excited state might also affect the cross section of the ^{3}He(^{4}He,γ)^{7}Be reaction and, consequently, the estimated flux of ^{7}Be solar neutrino.
A new measurement of the ^{6}Li(p,γ)^{7}Be cross section at proton energies between 50 and 400 keV has been performed at the Laboratory for Underground Nuclear Astrophysics. The poster provides a description of the experimental setup and shows preliminary results of the data analysis.

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