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# Radiative Capture and Pair Production in p+7Li

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We examine the nuclear reactions 7Li(p,$\gamma$)8Be and 7Li(p,e+e-)8Be from an ab initio perspective.

Using the no-core shell model with continuum technique, with chiral nucleon-nucleon and three-nucleon forces as input, we obtain an accurate description of both 8Be bound states and p+7Li scattering states.

We calculate radiative capture reactions in which enough energy is released to produce electron-positron pairs. The distribution of pairs can be compared to recent ATOMKI experiments where an anomaly in the data was used to posit the existence of a new particle.

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