

## Radiative Capture and Pair Production in $p+{}^7\text{Li}$

*Thursday, 11 August 2022 15:50 (40 minutes)*

We examine the nuclear reactions  ${}^7\text{Li}(p,\gamma){}^8\text{Be}$  and  ${}^7\text{Li}(p,e+e-){}^8\text{Be}$  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  ${}^8\text{Be}$  bound states and  $p+{}^7\text{Li}$  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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