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Contribution ID: **3170** Type: **Oral Competition (Graduate Student)** / **Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) First principles calculations of 7Li+p radiative capture

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

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

We investigate scattering, transfer and capture reactions with 8Be as the composite state and compare the cross-sections to data.

The energy freed up by capture is enough to produce electron-positron pairs. The angular distribution of these pairs will be different if the intermediate particle is beyond the standard model rather than the photon, for example, the axion or an axial vector boson.

Computing the standard model background and comparing experimental data with new decay modes is necessary to support or rule out new physics in the ATOMKI anomaly (which posits the existence of a new boson with a mass of 17 MeV).

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