Contribution ID: **580** Type: **Parallel session talk**

Resonant dark sector production on crystals

Friday 19 July 2024 09:03 (18 minutes)

Experiments using positron beams impinging on fixed targets offer unique capabilities for probing new light dark particles feebly coupled to eˆ+ eˆ- pairs, that can be resonantly produced from positron annihilation on target atomic electrons. In this talk, I will discuss the impact of correctly accounting for the momentum distribution of the atomic electrons that shifts the center of mass energy of the annihilating e+e- pairs, and that must be taken into account in the determination of the number of signal events. After discussing how to reliably compute the cross section for the process, I will show how to obtain the bound electron momentum distribution for different target materials from theoretical computations or experimental data. Finally, I will apply these results to the search for the hypothetical X17 particle focusing on the expected reach of the PADME experiment.

Alternate track

I read the instructions above

Yes

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