

Fusing photons into nothing, a new search for invisible ALPs and Dark Matter at Belle II

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We consider an axion-like particle coupled to the Standard Model photons and decaying invisibly at Belle-II. We propose a new search in the $e^+e^- + \text{invisible}$ channel that we compare against the standard $\gamma + \text{invisible}$ channel. We find that the $e^+e^- + \text{invisible}$ channel has the potential to ameliorate the reach for the whole ALP mass range. This search leverages dedicated kinematic variables which significantly suppress the Standard Model background. We explore the implications of our expected reach for Dark Matter freeze-out through ALP-mediated annihilations.

Title of the Poster/Talk

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Related Papers/Preprints

<https://arxiv.org/abs/2307.06369>

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