EPS-HEP2023 conference



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Type: Parallel session talk

Invisible ALPs at Belle II

Wednesday 23 August 2023 09:10 (20 minutes)

We consider an axion-like particle decaying invisibly at Belle II proposing a nearly background-free search in the e^+e^- + invisible channel. This search leverages dedicated kinematic variables, whose behaviour and performance we test under a simplified, yet realistic, treatment of detector effects. We find that at the Belle II experiment the e^+e^- + invisible channel has the potential to be as sensitive as mono- γ for all the ALP mass range that can be probed by Belle II and can significantly improve the bounds expected for O(GeV) ALP mass. This demonstrates that new searches based on high signal purity channels can give comparable or better bounds than searches based on more traditional large-background final states. We explore the implication of the expected reach of our proposal for dark matter freeze-out through ALP-mediated annihilations.

Collaboration / Activity

Galileo Galilei Institute

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