

## Exploring the Implications of Non-Standard Cosmology on Ultra-Light Dark Matter Candidates

Weakly interacting massive particles (WIMPs) are by far the most extensively studied class of CDM as the correct dark matter abundance is easily reproduced with cross sections around the weak scale. They have been extensively searched for by many experiments (direct and indirect detection, and colliders) with no success. The null results reported thus far motivate us to explore alternative candidates. In this lightning talk, we delve into the examination of an ultra-light dark matter candidate within the context of Axion-Like Particles (ALPs) in a non-standard cosmological framework. We focus on elucidating how it influences phenomena such as thermalization, since in general, ultralight DM cannot thermalize with SM to avoid jeopardizing BBN predictions. In this talk we focus on the mechanism of kinetic misalignment, where the ALPs assume a non-zero initial velocity. Through numerical analysis, we elucidate the intricate interplay between the proposed cosmology and the behaviour of ultra-light dark matter, shedding light on potential deviations from standard cosmology predictions.

**Would you be interested in presenting a poster? (this will not impact the decision on your talk)**

yes

**Primary authors:** OLIVEIRA, Vinicius (Universidade de Aveiro); MORAIS, António (Univerisdade de Aveiro)

**Presenter:** OLIVEIRA, Vinicius (Universidade de Aveiro)

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