



Contribution ID: 494

Type: **Parallel talk**

Antiprotonic atoms as gateways for dark matter

Tuesday 29 August 2023 17:15 (15 minutes)

Candidates for dark matter are proposed and searched from the sub meV to TeV scales. The indirect observations don't provide sufficient power to constrain to a narrow parameter space of the searches. One of the dark matter candidates, a deeply bound (uuddss) sexaquark, S , with mass in the GeV range is hypothesized to be long lived and very compact, described within the Standard Model of Particle Physics without extensions. S properties make it particularly challenging to explore experimentally.

In this contribution we will show an experimental scheme [1] in which S could be produced at rest through the formation of helium-3 antiprotonic atoms and their subsequent annihilation into $S + K^+ K^+ + \pi^-$. This channel is particularly clean as there is no other channel naturally populating the same final state. It can be uniquely identified both through the background-free tag of a $S=+2$, $Q=+1$ final state, as well as through full kinematic reconstruction of the final state recoiling against it.

[1] M. Doser, G. Farrar, G. Kornakov, "Searching for a dark matter particle with anti-protonic atoms", arXiv:2302.00759 [hep-ph]

Submitted on behalf of a Collaboration?

No

Author: KORNAKOV, Georgy (Warsaw University of Technology (PL))

Presenter: KORNAKOV, Georgy (Warsaw University of Technology (PL))

Session Classification: Dark matter and its detection

Track Classification: Dark matter and its detection