

Searching for a DM candidate via antiprotonic ^3He

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A wide range of dark matter candidates have been proposed and are actively being searched for in a large number of experiments, both at high (TeV) and low (sub meV) energies. One dark matter candidate, a deeply bound uuddss sexaquark, S , with mass ~ 2 GeV, (having the same quark content as the hypothesized H-dibaryon, but long lived) is particularly difficult to explore experimentally. Here, we propose a scheme in which such a state could be produced at rest through the formation of $\bar{p}^3\text{He}$ antiprotonic atoms and their annihilation into $K^+K^+\pi^-$, identified both through the unique tag of a $S=+2$, $Q=+1$ final state, as well as through full kinematic reconstruction of the final state recoiling against it.

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