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## Exploring Dark QCD Dark Matter Models with Heavy Quarks

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We investigate different classes of models, in which the dark matter candidate arises as a hadronic state of dark constituent quarks, which are charged under both the new confining dark gauge group and the standard model. Specifically, we focus on the case of quarks in the fundamental representation of  $SU(N)$ , which are heavier than the dark QCD confinement scale. Recent literature has demonstrated that this class of models can lead to a first order phase transition of the dark sector, which effectively results in a significant depletion of the dark matter relic abundance, due to a second annihilation stage after the usual freeze-out. In this study, we assess the distinctive thermal history associated with these type of models and perform a comprehensive study of the relevant parameter space - spanned by the dark QCD scale and the dark matter mass - beyond what was considered so far. We combine the experimental bounds from direct and indirect searches as well as specific collider signals and confront it with the predicted relic abundance to constrain the viable parameter space for these models.

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