

Phenomenology 2015 Symposium



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Non-Abelian Darkness

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We propose a new alternative to the Cold Dark Matter scenario, in which the Dark Sector contains a Dark Matter particle charged under the Standard Model $SU(2)$ gauge group and also charged under an unbroken $SU(N)$ dark gauge group. We focus on dark gauge couplings that are much smaller than the SM gauge group couplings. In this limit the confinement scale is negligibly small and the dark gauge bosons are a new type of relativistic degree of freedom during all times in the cosmological history. We discuss the effects of the dark gauge bosons to the CMB and also show that the interactions between Dark Matter and the dark gauge bosons give rise to a new regime in the evolution of Dark Matter overdensities. We also briefly discuss how this model alleviate tensions between Planck and Large Scale Structure data.

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