



Contribution ID: 27

Type: **Talk**

A model of dark photons as dark matter in a multi-temperature universe

Monday, August 30, 2021 10:00 AM (30 minutes)

The possibility of a dark photon in the sub-MeV mass range which has a kinetic mixing with the Standard Model to be a dark matter candidate is highly constrained due to the stringent limits from astrophysical experiments as well as ΔN_{eff} . We present a particle physics model comprising of two hidden sectors where one hidden sector has a direct kinetic mixing with the SM while the second hidden sector couples directly only to the first hidden sector. If the dark photon resides in the second hidden sector, then it can only couple to the SM indirectly via the first hidden sector. We show that this set up can produce a dark photon relic density consistent with experiment as well as escape bounds from astrophysical experiments. We solve the coupled Boltzmann equations and trace the temperature evolution of the sectors involved. We show that the temperature gradient between the sectors allows one to add extra relativistic degrees of freedom without violating bounds on ΔN_{eff} .

The talk is based on arXiv:2103.15769 [hep-ph].

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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Session Classification: B Heavy Ion Collisions and Critical Phenomena