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(G*) Sub-GeV Dark Vector Bosons and their Impacts on Cosmology

Monday 7 June 2021 17:06 (3 minutes)

The purpose of this presentation is to recognize the effects of electromagnetic energy injection into the early Universe from decaying sub-GeV dark vectors. Decay widths and energy spectra for the most prominent channels in the sub-GeV region are calculated for various dark vector models. The models include the kinetic mixing of the dark photon with the Standard Model photon, $U(1)_{A'}$, a dark vector boson which couples to the baryon minus the lepton current, $U(1)_{B-L}$, and the last three are dark vector bosons which couple one lepton's current minus a different lepton's current, $U(1)_{L_i-L_j}$ where $i, j = e, \mu, \tau$. Measurements from Big Bang Nucleosynthesis and the Cosmic Microwave Background are used to constrain the lifetime, mass and coupling constant of the dark vectors.

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