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Fingerprint of MeV scale Secluded Dark matter at CMB

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Measurement of the number of effective relativistic degrees of freedom (N_{eff}) by Planck experiment at Cosmic Microwave Background (CMB) strongly restricts the presence of additional light particles in the early Universe. We first discuss the cosmological constraints on MeV scale thermal dark matter from the current Planck data. Next we consider an MeV scale thermally decoupled non-minimal dark sector and study the impact of the dark sector dynamics on the N_{eff} at the time of CMB formation. We find that the value of N_{eff} turns out to be maximum for a non-hierarchical dark sector and is within the reach of future CMB experiments.

Session

Astroparticle Physics and Cosmology

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