

The electron plus positron spectrum from annihilation of Kaluza-Klein dark matter and comparison with recent measurements

Thursday, 29 October 2015 17:39 (17 minutes)

One of the good candidates for cold dark matter is the lightest Kaluza-Klein particle (LKP), which produce electrons and positrons by pair annihilation in the Galactic halo. The directions of electrons and positrons are randomized by the Galactic magnetic field, and the energy is reduced by some energy loss mechanisms, when the charged particles propagate in the Universe.

We calculate the observed electron and positron spectra expected from the LKP annihilation taking account of propagation effect, such as bremsstrahlung. The spectra include the electron-positron component from two-body decays and “continuum” emission, which is produced by LKP annihilation via muon pair, tauon pair, quark pair, and gauge bosons. We compare the spectra with recent observational data, and we can set some constraints on the boost factor, which indicates the dark matter concentration in the Galactic halo. In addition, we will discuss the recent results of positron excess in high energy region based on our calculation.

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Session Classification: Dark Matter

Track Classification: Dark matter: Physics and Cosmology