

38th INTERNATIONAL CONFERENCE ON HIGH ENERGY PHYSICS

AUGUST 3 - 10, 2016 CHICAGO

Contribution ID: 685

Type: Poster

Warm Dark Matter in Two Higgs Doublet Models

Saturday 6 August 2016 18:00 (2 hours)

In this work, we show that a neutral scalar field, σ , of two Higgs doublet extensions of the Standard Model incorporating the

seesaw mechanism for neutrino masses can be identified as a consistent 'warm' dark matter candidate with a mass of order keV. The relic density of σ is correctly reproduced by virtue of the late decay of a right-handed neutrino N participating in the seesaw mechanism. Constraints from cosmology determine the mass and lifetime of N to be $M_N \approx 25 \text{ GeV} - 20 \text{ TeV}$ and $\tau_N \approx (10^{-4} - 1)$ sec. These models can also explain the 3.5 keV X-ray anomaly in the extra-galactic spectrum that has been recently reported in terms of the decay $\sigma \rightarrow \gamma\gamma$. Future tests of these models at colliders and in astrophysical settings are also discussed.

Author: Dr CHAKDAR, Shreyashi (University of Virginia)

Co-authors: BABU, Kaladi (Oklahoma State University); MOHAPATRA, Rabindra (University of Maryland)

Presenter: Dr CHAKDAR, Shreyashi (University of Virginia)

Session Classification: Poster Session

Track Classification: Astro-particle Physics and Cosmology