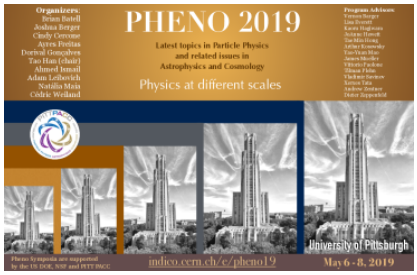

Contribution ID: **742** Type: **parallel talk**

A Dark-Matter Interpretation of the Anomalous ANITA Events

Monday 6 May 2019 15:00 (15 minutes)

The ANITA collaboration recently reported the detection of two anomalous upward-propagating extensive air showers exiting the Earth with relatively large emergence angles and energies in the range O(0.5–1) EeV. We interpret these two events as coming from the decay of a massive dark-matter candidate (mDM⊠109 GeV) decaying into a pair of right-handed neutrinos. While propagating through the Earth, these extremely boosted decay products convert eventually to τ-leptons which loose energy during their propagation and produce showers in the atmosphere detectable by ANITA at emergence angles larger than what Standard-Model neutrinos could ever produce. We performed Monte Carlo simulations to estimate the propagation and energy loss effects and derived differential effective areas and number of events for the ANITA and the IceCube detectors. Interestingly, the expected number of events for IceCube is of the very same order of magnitude than the number of events observed by ANITA but at larger emergence angles, and energies ⊠0.1 EeV. Such features match perfectly with the presence of the two upward-going events IceCube-140109 and IceCube-121205 that have been exhibited from a recent re-analysis of IceCube data samples.

Summary

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