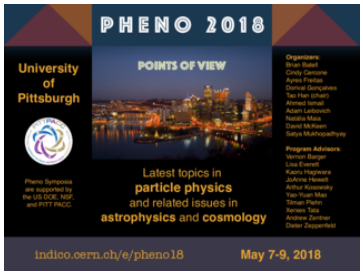

Contribution ID: **489** Type: **parallel talk**

A Combined Astrophysical and Dark Matter Interpretation of the IceCube HESE and Throughgoing Muon Events

Tuesday 8 May 2018 17:30 (15 minutes)

We perform a combined likelihood analysis for IceCube 6-year High-Energy Starting Events (HESE) and 8-year throughgoing muon events using a two-component neutrino flux model. This can be motivated either from purely astrophysical sources or due to a beyond Standard Model contribution, such as decaying heavy dark matter. We find that the astrophysical plus dark matter interpretation is mildly preferred by the current data over the purely astrophysical explanation. As for the astrophysical neutrinos, we consider two different source flavor compositions, corresponding to the standard pion decay and muon-damped pion decay sources. We find that the latter is slightly preferred over the former as the high-energy component, while the low-energy component does not show any preference. We also take into account the multi-messenger gamma-ray constraints and find that our two-component fit is compatible with these constraints, whereas the single-component power-law bestfit to the HESE data is clearly ruled out.

Summary

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