



Contribution ID: 365

Type: **Poster**

Search for Exotic Double Track Signatures in IceCube

Physics theories beyond the Standard Model like Supersymmetry and models with extra dimensions often invoke Z_2 symmetries in order to avoid new couplings that lead to unobserved new physics, like unnaturally fast proton decay. This gives rise to the possibility of heavy, new particles being produced in pairs with the lightest of them being (meta-)stable.

Recently IceCube observed high energy neutrinos in the PeV range. Under favorable conditions such neutrinos produce pairs of exotic, charged particles that can be seen in km³-sized detectors like IceCube as two parallel tracks with a track separation of a few hundred meters. We discuss an ongoing search for such events, including the simulation and reconstruction of double tracks and how to separate them from other air shower or neutrino-induced (coincident) muon events in a model independent way. We show how to interpret any results in more explicit frameworks like Supersymmetry.

Primary author: Mr KOPPER, Sandro (BU Wuppertal)

Co-author: Dr HICKFORD, Stephanie (BU Wuppertal)

Presenter: Dr HICKFORD, Stephanie (BU Wuppertal)

Track Classification: Cosmic Neutrinos