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A new method to constrain flavor ratio of astrophysical neutrinos

SHIRLEY LI, MAURICIO BUSTAMANTE, JOHN BEACOM, Ohio State Univ - Columbus — We are entering a new era of neutrino astronomy with the recent IceCube discovery of high-energy astrophysical neutrinos. Important questions, such as what their sources are, arise with these events. The flavor composition of these neutrinos has been identified as a rich observable, containing information about the production processes and neutrino properties. So far, only ν_μ charged current interactions can be uniquely identified in IceCube. We propose new methods that can help identify ν_τ events. Our method could significantly enhance the IceCube flavor measurement sensitivity, making it possible to tell if new physics is required to explain the flavor composition.

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