

Abstract Submitted
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ESTES: An IceCube event selection for TeV energy high purity astrophysical neutrinos MANUEL SILVA, SARAH MANCINA, ALBRECHT KARLE, University of Wisconsin - Madison, ICECUBE NEUTRINO OBSERVATORY COLLABORATION — ESTES is an ongoing event selection for use in the IceCube detector searching for astrophysical muon neutrinos at TeV energies that interact within the detector volume. These events, also referred to as starting tracks, are composed of an initial hadronic cascade followed by an outgoing muon. The high angular resolution achieved from muons and high purity of events in the southern sky allow us to perform a search for neutrino sources. Due to the high purity of ESTES in the southern sky, we will be able to unlock a region of the neutrino sky previously not used in IceCube. An estimate of our sensitivity to these searches with a comparison to previous IceCube results will be shown. In addition, the good energy resolution of ESTES allows us to perform a measurement of the astrophysical diffuse neutrino spectrum down to TeV energies. This will provide insights as to whether there exists a hardening of the diffuse neutrinos towards lower energies. We will also be showing sensitivities to the astrophysical diffuse neutrino spectrum. Advancements in particle identification techniques and systematic uncertainties and the impact on our result will also be shown.

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