Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Improved muon background rejection at Low Energies (IceCube, DeepCore)[1] DARIA PANKOVA, FEIFEI HUANG, Pennsylvania State Univ, ICE-CUBE COLLABORATION — The IceCube experiment consists of strings of digital optical modules spread out through 1 cubic kilometer of ice. DeepCore is an infill array with higher density of strings and modules located in the bottom center of Ice-Cube. DeepCore's increased photocathode density allows it to detect neutrinos with lower energies (as low as about 10 GeV). DeepCore data has been used in multiple analyses studying neutrino properties and oscillations. The next step in improving the sensitivity of those measurements is the reduction of the copious muon background. Currently, the background is removed with various cuts, including a veto employing the surrounding IceCube modules, and a machine learning algorithm running on event features. In this talk another promising approach and attempts to adapt it to low energy analyses will be shown. The algorithm was originally developed for IceCube's high energy neutrino search. It finds the probability of an event being a muon, using non-hit modules, individual veto regions and thousands of tracks fits for each event.

[1]I

Daria Pankova
Pennsylvania State Univ

Date submitted: 11 Jan 2018   Electronic form version 1.4