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Measurement of the Atmospheric Muon Neutrino Energy Spectrum with IceCube in the 79- and 86-String Configuration

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IceCube is a neutrino telescope with an instrumented volume of one cubic kilometer. A total of 5160 Digital Optical Modules (DOMs) is deployed on 86 strings forming a three dimensional detector array. Although primarily designed for the detection of neutrinos from astrophysical sources, the detector can be used for spectral measurements of atmospheric neutrinos. These spectral measurements are hindered by a dominant background from atmospheric muons. State of the art techniques from machine learning and data mining are required to select a highly pure sample of atmospheric neutrino candidates. The energy spectrum of muon neutrinos is obtained from energy dependent input variables by utilizing regularized unfolding. The results obtained using IceCube in the 79- and 86-string configuration will be presented.

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