A Quality-of-Fit Indicator for Reconstructions of Neutrino Interactions in the IceCube-PINGU Detector JUSTIN LANFRANCHI, Department of Physics, The Pennsylvania State University — PINGU, a proposed low-energy infill of the IceCube detector, will trigger due to hundreds of thousands of atmospheric neutrinos per year with energies above 3 GeV. PINGU will consist of an array of digital optical modules (DOMs) that detect cherenkov radiation from charged secondaries due to neutrino interactions in the ice beneath the South Pole. PINGU's primary scientific goal of resolving the neutrino mass hierarchy (NMH) relies upon accurately reconstructing neutrino-nucleon interactions (events) from data recorded by the DOMs. We reconstruct events using MultiNest which seeks to find the event vertex, energy, and direction most likely to have produced the DOMs' data. This usually performs well, as assessed using simulated events to verify that reconstructed vertices, energies, and directions are close to their true values. However, there remain inaccurately-reconstructed events that degrade our ability to resolve NMH. We expect our sensitivity to NMH will improve by introducing a quality-of-fit (QoF) indicator, currently under development, that correlates with the accuracy of reconstructions using information from the event's data, MultiNest's fitting process, and the reconstructed parameters. We will present the development status of the QoF indicator in our poster.

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