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Selection of neutral current antineutrino events at the MINOS Near Detector to search for sterile neutrinos NAVANEETH POONTHOTTATHIL[1], Fermilab/Cochin University of Science And Technology, MINOS/MINOS+ COLLABORATION[2] — The MINOS experiment measures neutrino oscillation phenomena using two detectors separated by 734 km and a neutrino beam produced by the Fermilab Main Injector. MINOS has previously searched for active to sterile neutrino mixing ($\nu_\mu \rightarrow \nu_s$) using muon neutrinos and has set limit on this process. We are now conducting a search for the muon anti-neutrino to sterile neutrino transition using the NuMI beam optimized for $\overline{\nu}_\mu$ production.Since the rates of neutral current interactions on both detectors are unchanged by standard oscillations , any depletion of the Far Detector neutral current event rate can be a signature of active to sterile neutrino transition. The precise measurement of the anti-neutrino neutral current rate at the Near Detector is important for this study. In this talk I will discuss how MINOS identifies neutral current events and rejects charged current events, and the technique of reducing the number of poorly reconstructed events at the lower energy range.

[1]I am a graduate Student Working on MINOS Experiment
[2]MINOS is a long base line Neutrino Oscillation experiment Using two detectors. One Near Detector at Fermilab and Far Detector at 735 km away at Soudan Mine.

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