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Search for Sterile antineutrinos in MINOS using $\bar{\nu}_\mu$ disappearance NAVANEETH POONTHOTTATHIL, Fermilab/Cochin University of Science And Technology — The MINOS experiment measures the disappearance of ν_μ and $\bar{\nu}_\mu$ using two detectors separated by 734 km. The magnetized MINOS detectors enable to separate neutrinos and antineutrinos on an event-by-event basis. Besides the precise standard three flavor oscillation, MINOS is also capable of looking for sterile neutrino signal driven by large mass splittings. Between 2009 and 2011, the NuMI beam operated in a $\bar{\nu}_\mu$ enhanced configuration, yielding a unique set of antineutrino data, this allows us to do a direct search for sterile antineutrinos. The $\bar{\nu}_\mu \rightarrow \bar{\nu}_s$ oscillations are studied in a 3+1 sterile antineutrino model with one additional sterile antineutrino state and the mixing parameters θ_{24} and Δm_{43}^2 are constrained. We present the sensitivity to sterile antineutrino in the antineutrino enhanced mode over a large parameter space of Δm_{43}^2 ($10^{-2} \leq \Delta m_{43}^2 \leq 100 \text{ eV}^2$) favoured by the LSND and MiniBooNE experiments. By combining our data with the reactor disappearance results we will be able to make a direct comparison with the appearance results of LSND and MiniBooNE.

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