

Abstract Submitted
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Search for sterile neutrino oscillations in muon neutrino disappearance at MINOS/MINOS+ JACOB TODD, Univ of Cincinnati, MINOS+ COLLABORATION — A wide variety of neutrino oscillation phenomena are well-described by the standard three-flavour neutrino model, but some anomalies exist. The LSND and MiniBooNE experiments have measured electron antineutrino appearance in excess of standard oscillation predictions, which points to the possibility of a sterile neutrino with higher mass than the presently known states. MINOS, a two-detector, long-baseline neutrino oscillation experiment, was optimized for the measurement of muon neutrino disappearance in the NuMI neutrino beam. A sterile neutrino responsible for the LSND and MiniBooNE excesses would cause distortions in the charged current and neutral current MINOS spectra, which permits the search for sterile neutrinos at MINOS. In close collaboration with the Daya Bay reactor neutrino experiment, MINOS has placed strong constraints on the sterile neutrino parameter space for a model with one additional sterile neutrino. Further, the extension of data collection with MINOS+, which samples the NuMI beam in a medium energy configuration, markedly increases the sensitivity of the combined MINOS and MINOS+ sample to a 3+1-flavour sterile neutrino model.

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