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Prospects for a Sterile Neutrino Search at MINOS+

The MINOS+ experiment operates the MINOS detector in the recently upgraded NuMI muon neutrino beam. The increased beam intensity and energy will enable the MINOS+ experiment to collect high statistics in the 4–10 GeV energy range, which is particularly useful for new physics searches. We present the prospects for a search for sterile neutrinos with mass splittings in the range from $\sim 10\text{--}2\text{eV}^2$ to $\sim 10\text{eV}^2$ using beam in both the muon neutrino mode and the anti-neutrino enhance mode. In addition, we present the MINOS+ sensitivity combined with that of the disappearance reactor experiment Bugey. This combined sensitivity will be compared to the LSND and MiniBooNE appearance signal.

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