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MINOS+: Running the MINOS Detectors with the Medium Energy NuMI Beam

MINOS+ is a neutrino oscillation experiment that will utilize the two MINOS detectors and the NuMI neutrino beam to probe sterile neutrino physics, measure neutrino time-of-flight, search for tau neutrino appearance, test for non-standard neutrino interactions, and probe for extra dimensions. It will expand on the successful MINOS physics program by running in the medium-energy setting of the NuMI beam which is projected to deliver about 18x10^{20} protons on target during the first three years of operation in the 4-10 GeV energy range. This experiment offers unprecedented and unique opportunities to explore physics beyond the three-neutrino mixing model. We describe the physics reach of MINOS+ and present results of sensitivity studies to the aforementioned topics as well as the standard neutrino mixing parameters.

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