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T2K Phase II: towards initial discovery of CP violation in neutrino oscillations

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The recent discovery of muon neutrino to electron neutrino conversion arising from neutrino oscillations has opened the door to the possibility for CP violation in neutrino oscillations. Such CP violation will be an important clue to how our universe came to our matter dominated state and for understanding the mass and mixing structure of neutrinos, a question left unanswered by the Standard Model. Furthermore, the currently measured parameters weakly suggest a potentially large CP violation effect in neutrino oscillations that may be accessible to the current generation of experiments. In this talk, we will discuss T2K Phase II, a possible extension to the T2K program with higher beam power and three times the data that may allow the first definitive look at CP violation in neutrino oscillations.

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