

Abstract Submitted
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Optimization of Neutrino Flux Through the Variation of Horn Current for DUNE KIM TRUC NGUYEN, University of Texas in Arlington — The study focuses on maximizing the neutrino flux of the Deep Underground Neutrino Experiment (DUNE). This experiment was designed to detect different beam conditions in order to determine the optimal environment with regard to flux generation. An optimized beam condition will allow the detection of the most particles and the deflection of the most anti-particles with minimal energy requirement from the target. Several factors could be applied to analyze the effects of each beam condition on neutrino flux such as changing horn current, length and position of the first, second horns, and the decay pipe. Of the many contributing factors that determine the detected neutrino flux, our focus is to determine the current that would yield optimized conditions for flux generation. Different neutrino flux is generated by increasing the horn current in small increments of current interval while other factors hold constant. The result indicated that the optimized horn current for the machine would be approximately 230 kA. Further study should be conducted to determine other optimized conditions that also contribute to the neutrino beam optimization study.

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