

Optimized capture section for staged Neutrino Factory target designs

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The Neutrino Factory 4MW target system is optimized to increase the captured muon count that fits within the acceptance of the subsequent acceleration section. A proposed staged Neutrino Factory, producing lower muon intensities of 10^{20} muons per year assumes a 1 MW target station. The proton driver of the scaled down target station has a lower intensity and lower energy (3 GeV) which could be upgraded to the full power of 4 MW. In this work we present an optimized capture mechanism for both the baseline 8 GeV proton beam target and the 3GeV proton beam target. The capture section and the following bunching channel design are optimized to adapt for both cases.

Presenter: Dr SAYED, Hisham (Brookhaven National Lab)

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