

HARP targets π^+ production measurements for MiniBooNE

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The prediction of the muon neutrino flux from a 71.0 cm long beryllium target for the MiniBooNE experiment is based on a measured pion production cross section which was taken from a thin beryllium target (2.0 cm thick - 5% nuclear interaction length) in the Hadron Production (HARP) experiment at CERN. To verify the extrapolation to our longer target, HARP also measured the pion production from 20.0 cm and 40.0 cm beryllium targets. The measured production yields on targets of 50% and 100% nuclear interaction lengths in the kinematic range of momentum from 0.75 GeV/c to 6.5 GeV/c and the range of angle from 30 mrad to 210 mrad are presented along with an update of the thin target cross sections. The best fitted modified Sanford-Wang (SW) model parameterization for updated thin beryllium target π^+ production cross section is presented. Yield measurements for all three targets are also compared with that from the Monte Carlo predictions in the MiniBooNE experiment for different SW parameterization.

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