

Study of the nucleon structure using hadron beam at J-PARC

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Precise measurement of Generalized Parton Distribution function (GPDs) is a key task to understand the 3-dimensional nucleon structure. There have been attempts to measure GPDs via lepton induced deep inelastic scattering (DIS) reactions. On the other hand, measurements with hadron induced reactions have not been carried out yet. Hadron induced reactions are complementary to the DIS reactions. We are going to carry out the first GPDs measurement using a hadron beam at J-PARC.

Recently, 30 GeV high momentum proton beam became available at the J-PARC Hadron Experimental Facility. In addition, high intensity negative and positive $\pi/K/p$ beam up to 20 GeV/c will be available after the upgrade of the beamline ($\pi 20$ beamline).

We plan to measure GPDs at the high momentum beamline via $p + p \rightarrow p + B$ and $\pi^- + p \rightarrow \mu^+ + \mu^- + n$ (exclusive Drell-Yan) reactions for the first time. J-PARC's high intensity middle momentum beam is suited to measure those reactions. We are now constructing a multi purpose spectrometer. We report the details of the preparation status of the experiments.

Parallel Session

Nucleon Structure in DIS

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