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Measurements of Nucleon Structure via Proton-Induced Drell-Yan Process at FNAL SeaQuest

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SeaQuest at FNAL is a fixed-target experiment to measure the Drell-Yan process in $p + p$ and $p + A$, using the 120-GeV proton beam and targets of liquid hydrogen, liquid deuterium, carbon, iron and tungsten. During the course of operations, completed in July 2017, it recorded data from 1.4×10^{18} protons on the various targets.

SeaQuest aims at precisely measuring the flavor asymmetry of light-antiquark distributions ($\bar{d}(x)/\bar{u}(x)$) at large x in the nucleon. It also measures the angular distribution of the Drell-Yan process in $p + p$ and $p + d$ in order to investigate the Lam-Tung relation and further the Boer-Mulders distribution function. It also utilizes the Drell-Yan process in $p + A$ for measuring nuclear effects, including the nuclear dependence of sea quark distributions and the partonic energy loss in cold nuclear matter.

In this talk, the latest updates on the measurements and their impact on understanding of nuclear and hadronic structure will be presented.

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