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Probing the Large-x Structure of the Proton with Drell-Yan Scattering at Fermilab PAUL E REIMER, Physics Division, Argonne National Laboratory, FNAL E866/NUSEA COLLABORATION, FNAL E906 COLLABORATION — The Drell-Yan reaction can be used to probe the parton distribution of the interaction hadrons. In a fixed target environment, where the detector acceptance selects only large-x_F events, Drell-Yan probes the high-x (Bjorken-x) valence distributions of the beam and the low- to intermediate-x sea antiquark distributions of the target. Fermilab E866/NuSea has measured the Drell-Yan absolute cross section of 800 GeV/c protons on hydrogen and deuterium targets. These data are the first measurements of the Drell-Yan cross section in pp collisions over a broad kinematic region and the most extensive study to date of the Drell-Yan cross section in pd collisions. The absolute cross sections, with full radiative corrections, will be presented and comparisons made with with next-to-leading order calculations based on modern parton distributions. The results show that recent global parton distribution fits provide a good description of the light antiquark sea in the nucleon over the range $0.03 < x_{\rm target} < 0.15$. When projected against $x_{\rm beam}$ the data indicate that most modern parton distributions appear to overestimate the valence parton distributions at large-x. We plan to extend these studies in Fermilab E906, which will use a 120 GeV/c proton beam from the Fermilab Main Injector to collect better statistics at even larger values of $x_{\rm beam}$.

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