

Abstract Submitted
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Measuring the Light Anti-Quark Asymmetry in Drell-Yan Scattering KAZUTAKA NAKAHARA, University of Maryland College Park, E906/SEAQUEST COLLABORATION — The light anti-quark distributions within the nucleon give unique insight into the origin of the quark sea. Whereas the non-perturbative nature of this sea poses a challenge in performing quantitative calculations, experiments have been performed to constrain the assumptions that underlie various phenomenological models. One such assumption is the equality of \bar{u} and \bar{d} distributions within the nucleon. While the E866/NuSea experiment saw clear signs of a $\frac{\bar{d}}{\bar{u}}$ asymmetry at Bjorken x , the sea became flavor symmetric at higher x , suggesting a possible shift in the underlying mechanism generating the sea. The E906/SeaQuest Experiment, which is scheduled to take place at Fermilab, will determine the $\frac{\bar{d}}{\bar{u}}$ asymmetry over $0.04 < x < 0.45$ by measuring the Drell-Yan cross section in p-p and p-d scattering. The Drell-Yan process, which involves a $q\bar{q}$ annihilation and a $\mu\bar{\mu}$ ($l\bar{l}$) production mediated by a virtual photon, gives a unique signature from which the $\frac{\bar{d}}{\bar{u}}$ fraction can be derived. The experiment will make use of a 120 GeV proton beam extracted from the Fermilab Main Injector. The low beam energy relative to E866 will allow for a $50\times$ improvement in the statistical uncertainty of the cross section measurement compared to existing results. Physics motivation, project status, and the expected results from the E906/SeaQuest experiment will be presented.

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