

# XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



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## Measurements of the Antiquark Flavor Asymmetry in the Proton by the Drell-Yan Experiment SeaQuest

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Naively, the amounts of  $\bar{d}$  and  $\bar{u}$  in the proton were expected to be the same based on the flavor-independence of the strong coupling.

However, the muon deep inelastic scattering experiment NMC at CERN found  $\bar{d} > \bar{u}$  in the proton.

Drell-Yan experiments also obtained the results consistent with it.

The Drell-Yan experiment E866 at Fermilab showed that  $\bar{d}(x)/\bar{u}(x) > 1.0$  for  $0.015 < x < 0.20$ .

It also showed  $\bar{d}(x)/\bar{u}(x) < 1.0$  at large  $x$  ( $x \sim 0.3$ ), although it is consistent with 1.0 within statistical uncertainty.

SeaQuest is a Drell-Yan experiment at Fermilab, that measured the antiquark flavor asymmetry  $\bar{d}/\bar{u}$  precisely in for a wide  $x$  range ( $0.13 < x < 0.45$ ) including the intriguing region from E866.

It uses a 120 GeV proton beam extracted from Fermilab Main Injector colliding with liquid hydrogen and deuterium targets.

The antiquark flavor asymmetry  $\bar{d}(x)/\bar{u}(x)$  is derived from the cross section ratio of proton-deuterium to proton-proton Drell-Yan processes.

In this talk, the SeaQuest results of the  $\bar{d}(x)/\bar{u}(x)$  analysis will be presented.

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