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The shape of the $\bar{d} - \bar{u}$ asymmetry from DIS and Drell-Yan data

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Using data from a recent reanalysis of neutron structure functions extracted from inclusive proton and deuteron DIS, we re-examine the constraints on the shape of the $\bar{d}$–$\bar{u}$ asymmetry in the proton at large parton momentum fractions x. A global analysis of the proton–neutron structure function difference from BCDMS, NMC, SLAC and Jefferson Lab DIS measurements, and of Fermilab Drell-Yan lepton-pair production cross sections, suggests that existing data can be well described with $\bar{d} > \bar{u}$ for all values of x currently accessible. We compare the shape of the fitted $\bar{d}$–$\bar{u}$ distributions with expectations from nonperturbative models based on chiral symmetry breaking, and assess the impact of new data from the SeaQuest experiment at larger values of x.

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