Partonic Structure & Spin WG Summary

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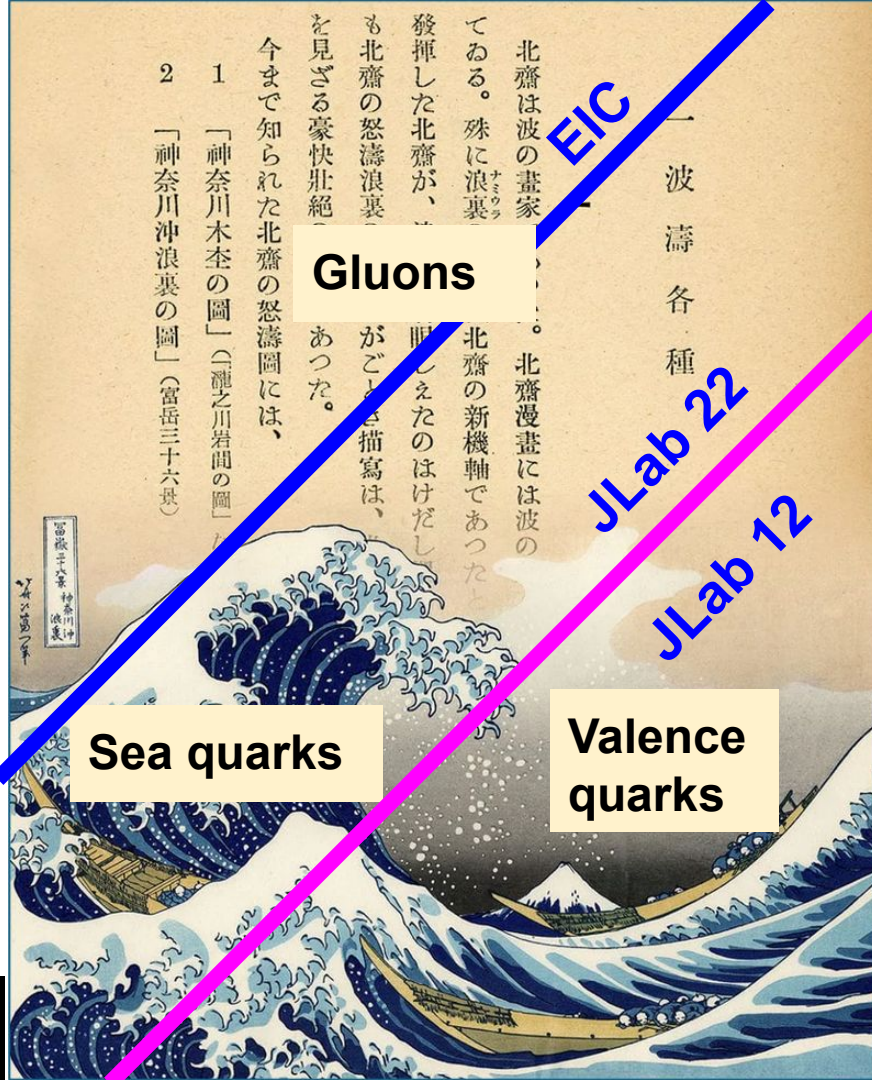
Ioana Niculescu,
Nobuo Sato

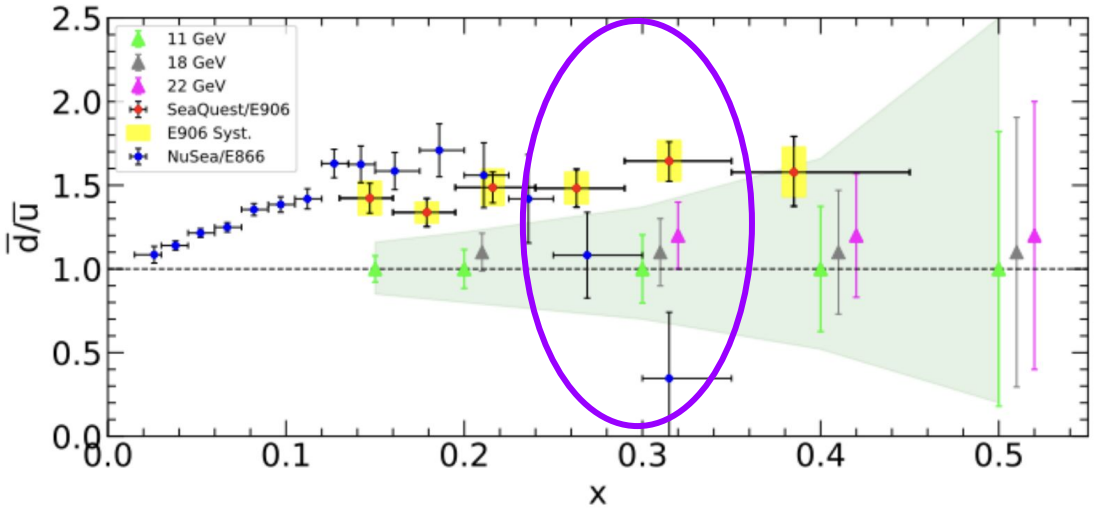


Science at the Luminosity Frontier:
Jefferson Lab at 22 GeV,
Frascati, 12,13 2024

Jefferson Lab

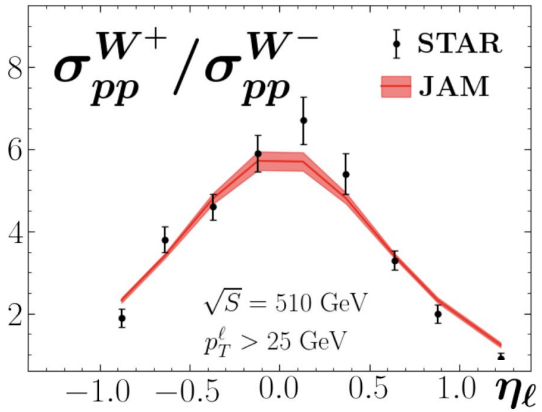
Antimatter asymmetry in nucleons

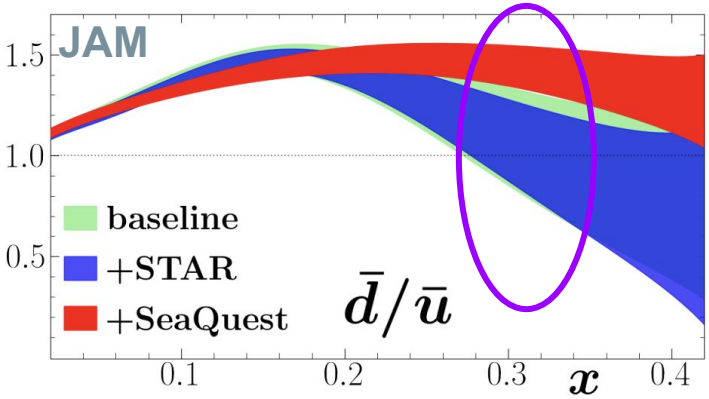
Talk by JP Chen



30 days of running at 50 uA on 10 cm LH2 and LD2 targets Assume 200k events for pi+/- from LH2, 400k events from pi+/- from LD2

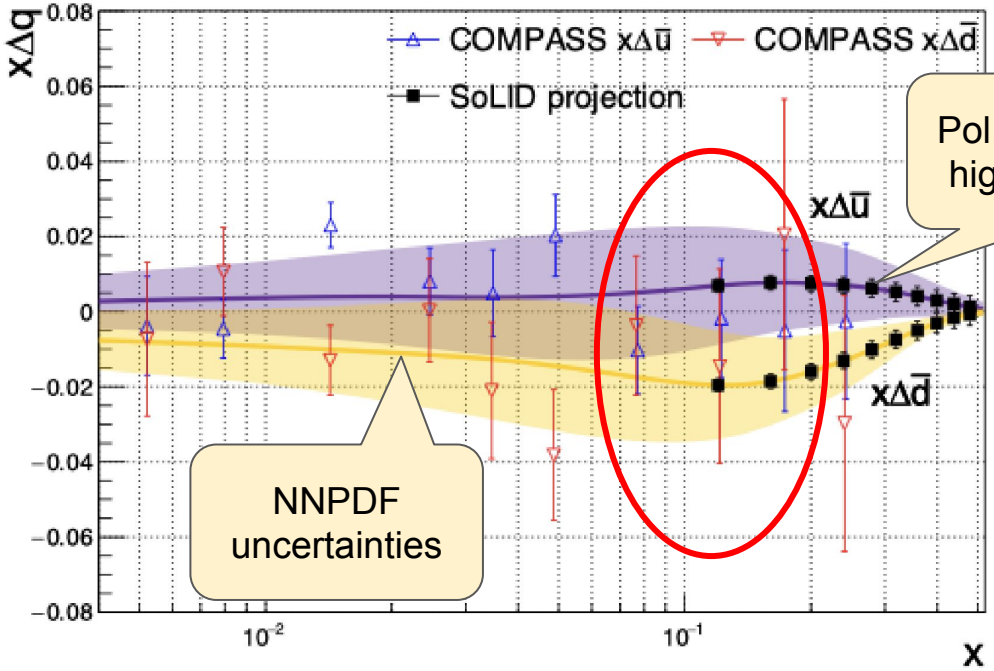
SIDIS measurements at 22 GeV can provide unique and competitive constraints to light sea asymmetry

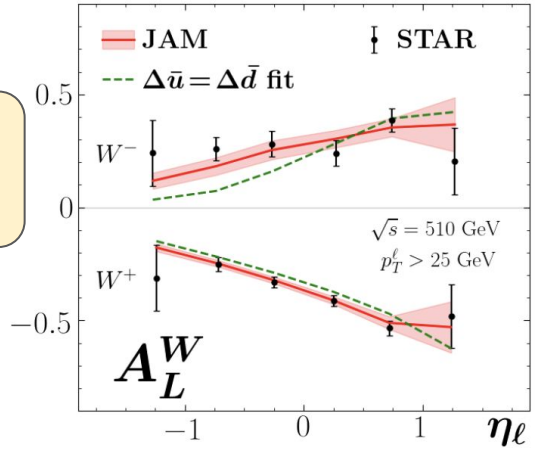


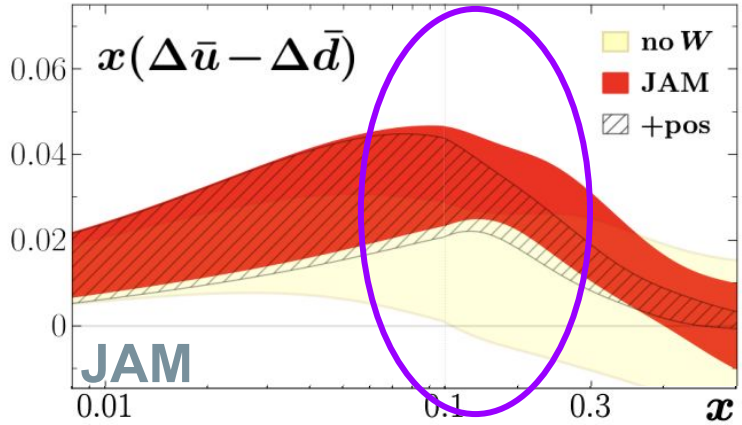


Pol. antimatter asymmetry nucleon

Talk by JP Chen





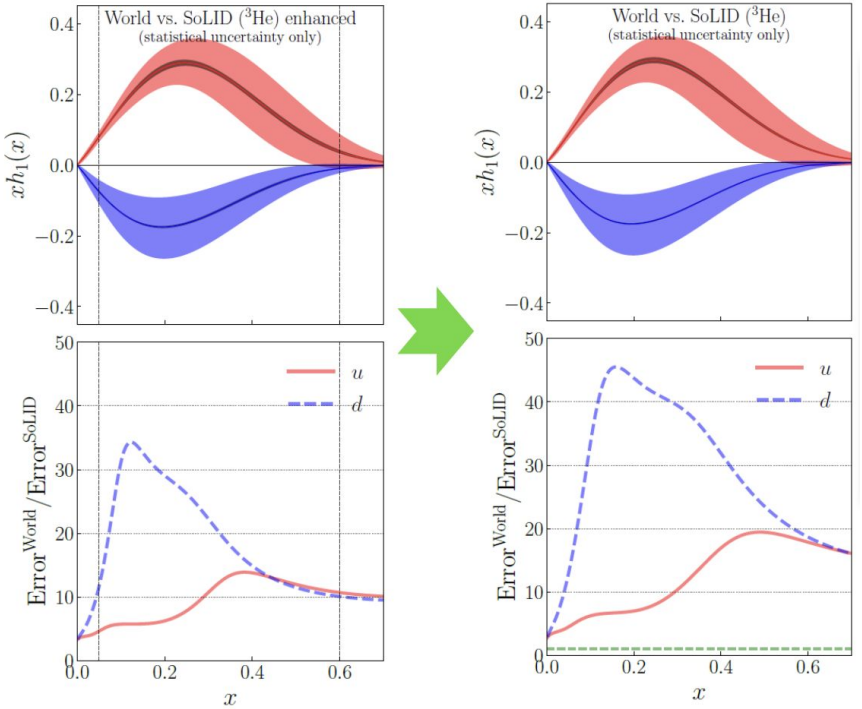


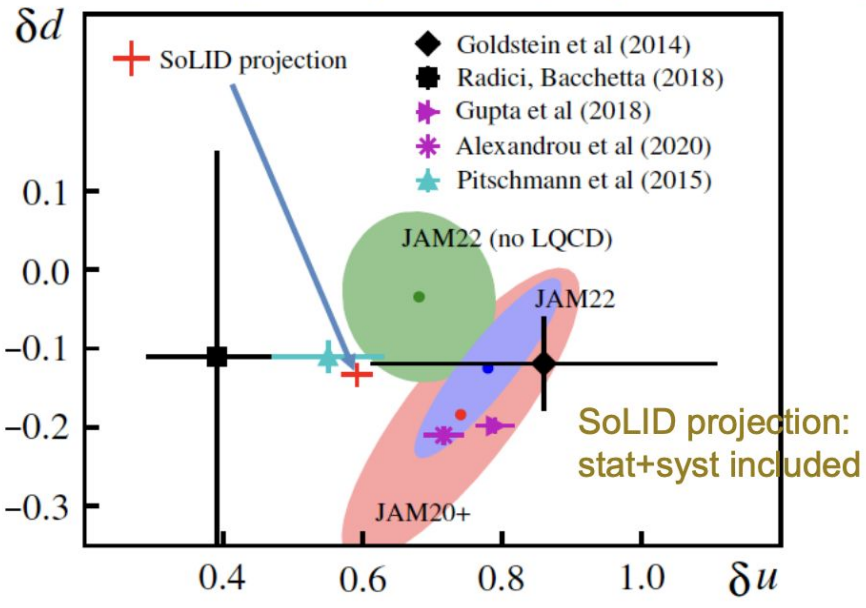
Statistical uncertainty only (systematics to be studied in the next a few months). 100 PAC days; Luminosity = 1036 cm2/s, acceptance form EvneSoLID simulation

SIDIS measurements at 22 GeV can provide unique and competitive constraints to polarized light sea asymmetry

Transverse spin puzzle

Talk by Zhihong Ye



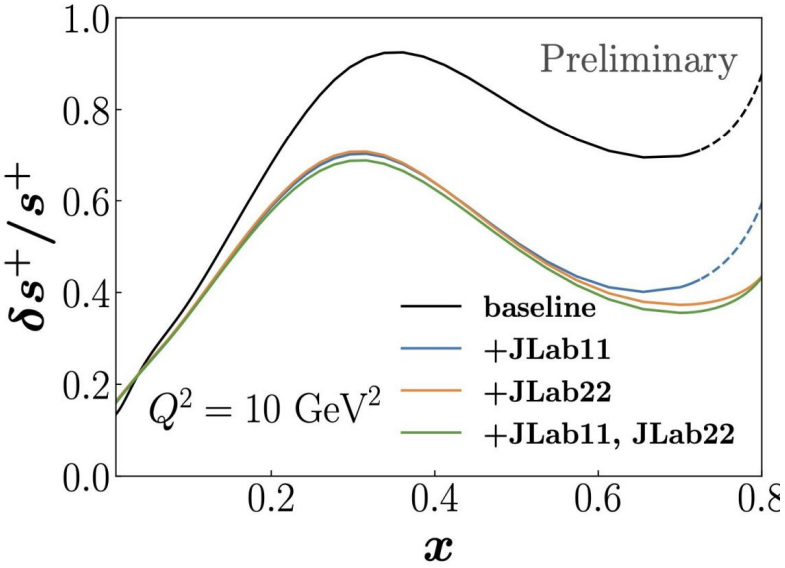


SIDIS asymmetries at 22 GeV has the potential to resolve the transverse spin puzzle.

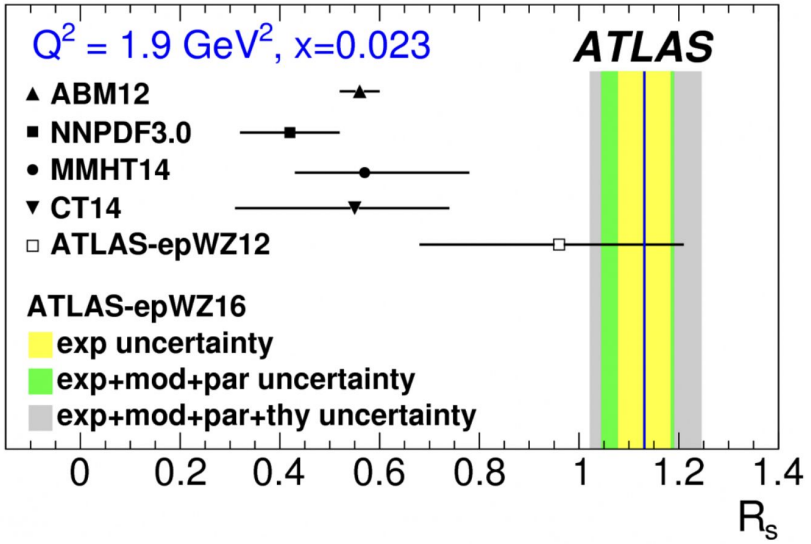
PV-DIS

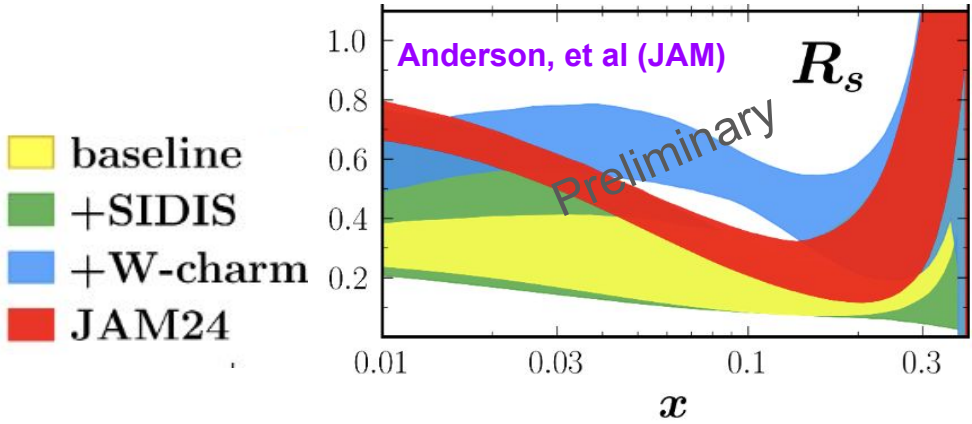
Talk by Michael Nycz

Whitehill, et al (JAM)



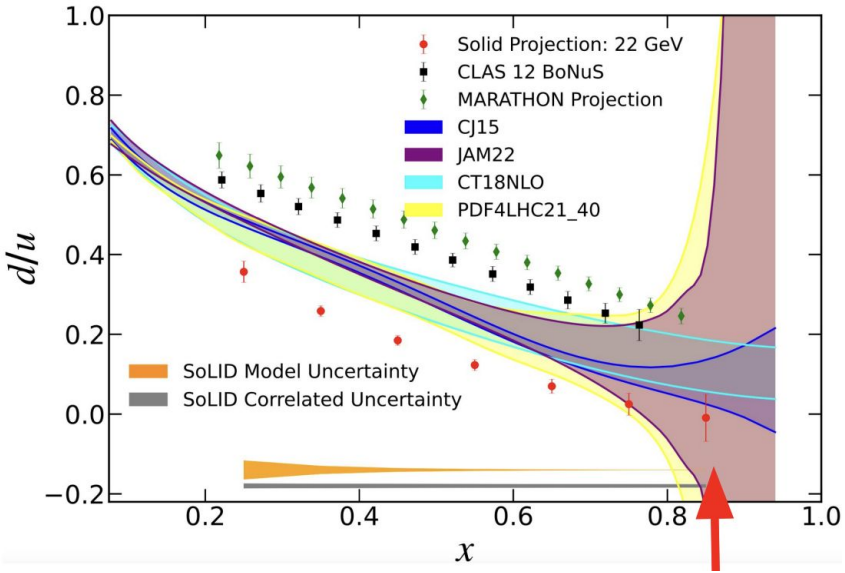
The only competitive PVDIS program is JLab. 22 GeV has the potential to map out the nucleon strangeness





d/u PVDIS

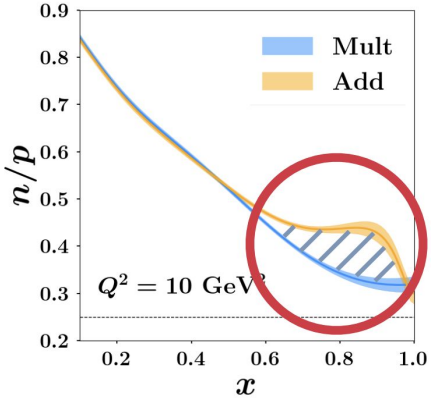
Talk by Michael Nycz



PVDIS is unique and clean probe to access d/u.

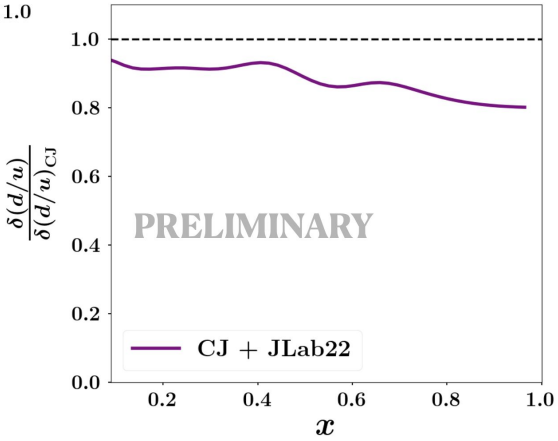
d/u via D/P

Talk by Matteo Cerutti



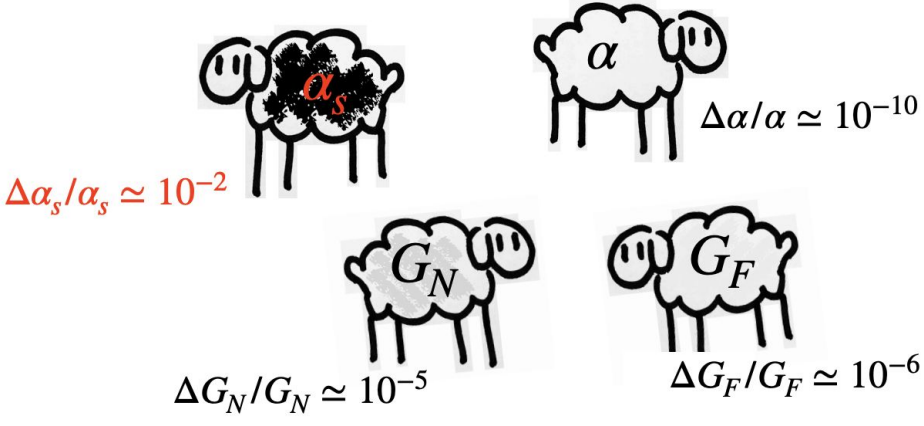
Systematics of HT effects has been resolved

JLab 22 can provide competitive measurements as W-lepton asymmetries



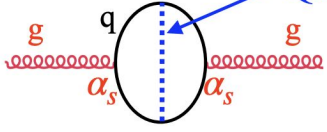
Bjorken sum

Talk by Alexandre Deur

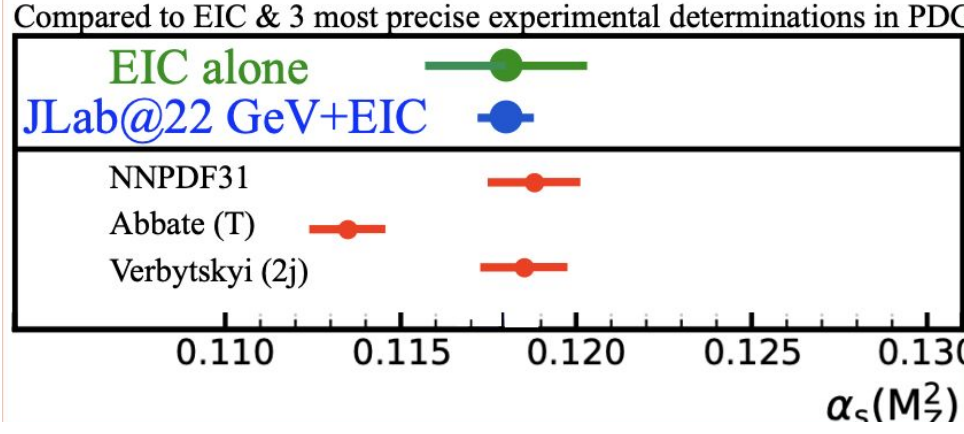


β_1: effects beyond QCD. For ex.:

QED, weak, **or beyond SM**

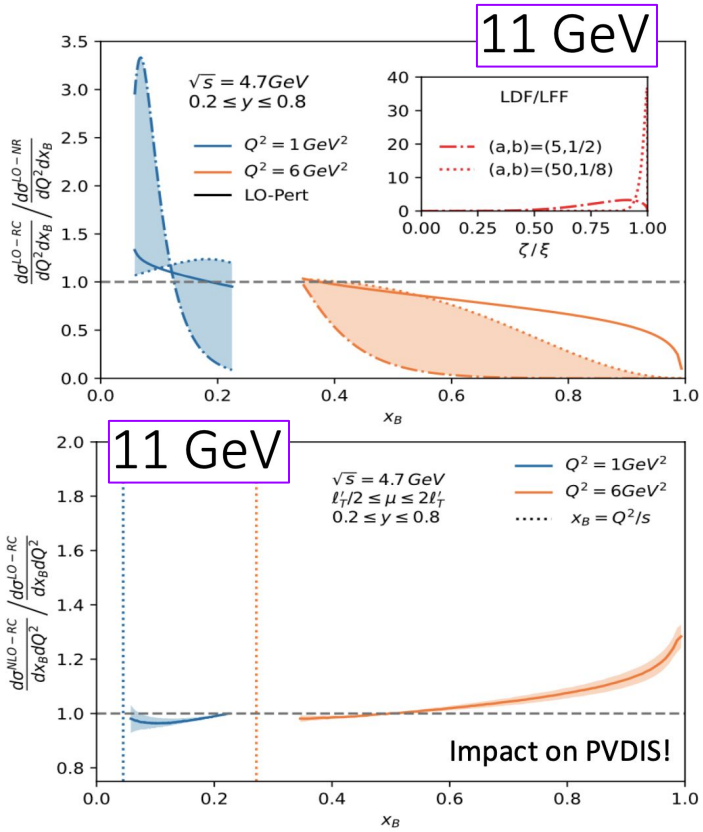


"*Study indicates that JLab@22 GeV can provide a determination of alphaS at the ~0.6% level*"

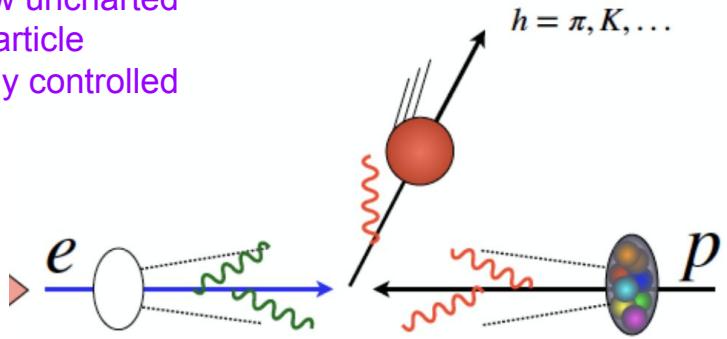


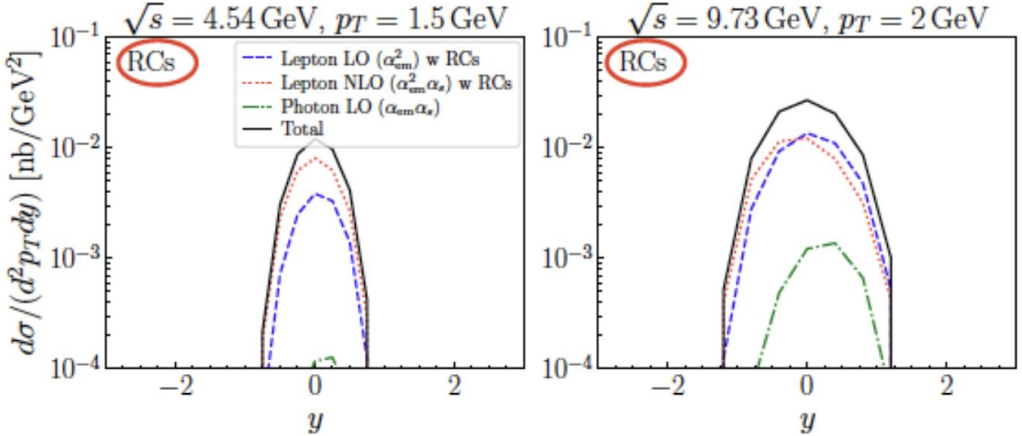
Combining QCD+QED for eP reactions

Talk by Jianwei Qiu



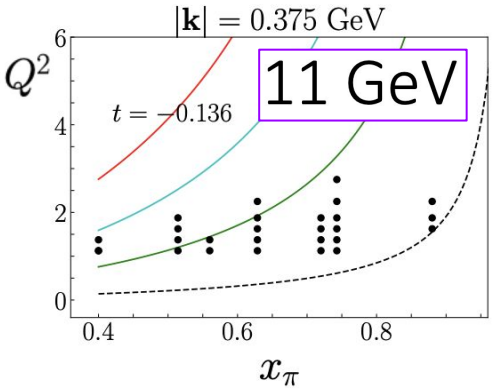
JLab 22 opens new uncharted territory to study particle production with fully controlled QED+QCD effects

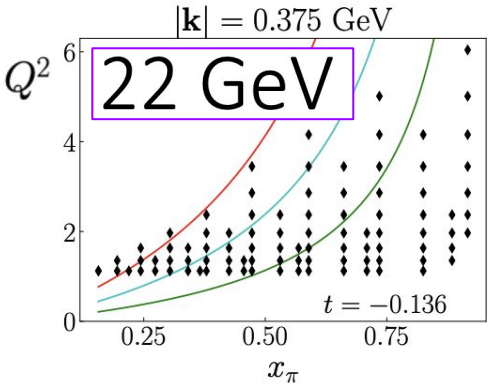


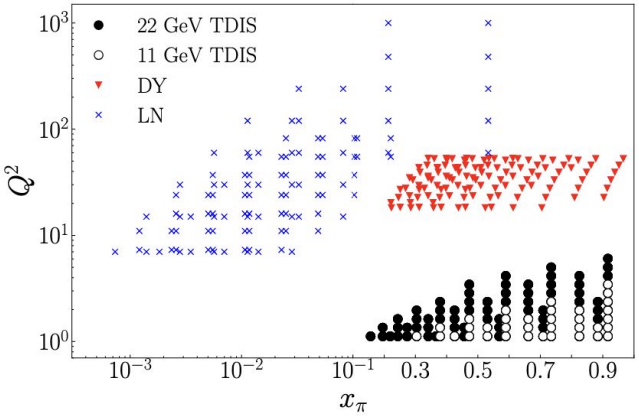


Meson Structure

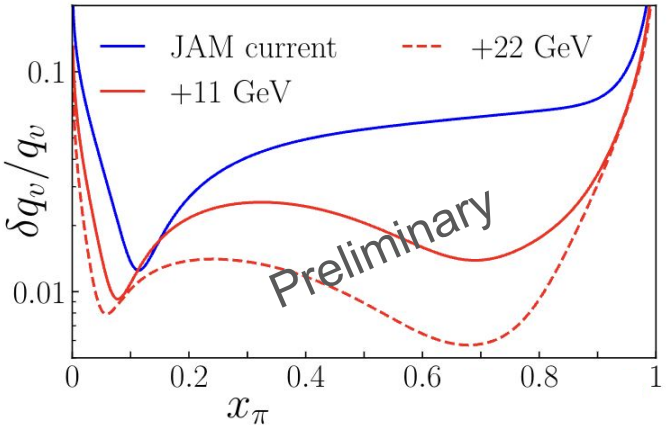
Talk by Patrick Barry

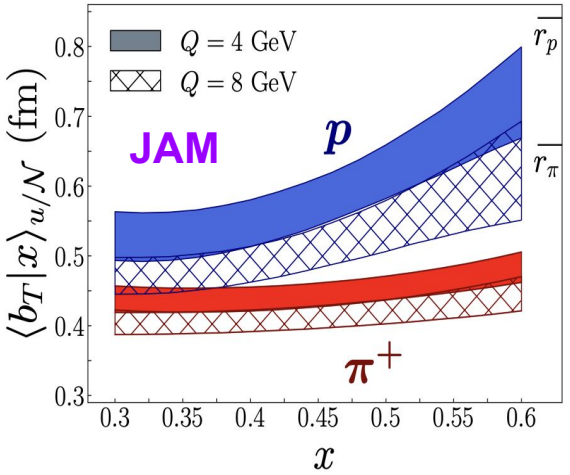






22 GeV is key for the new era of meson structure studies and connects various programs/efforts AMBER, LQCD, QCD models





… Allora

Raphael "Madonna del Prato"

Salvador Dali "Maximum Speed of Raphael's Madonna"

JLab 22, a machine for high resolution of nucleon & meson sea in the intermediate and high x