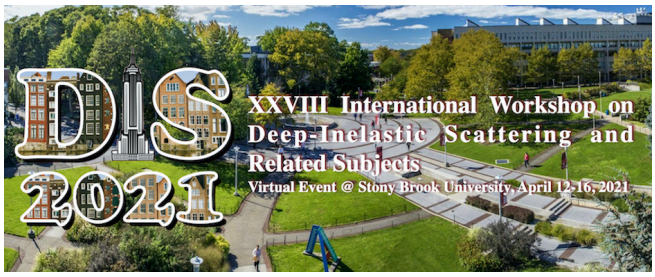

Contribution ID: **364** Type: **Contributed Talk**

Small-x Helicity Phenomenology

Tuesday, 13 April 2021 12:00 (18 minutes)

One of the key components to solving the proton spin problem is understanding the small-x asymptotics of the helicity parton distribution functions (hPDFs). Several years ago, novel, small-x evolution equations were derived using the shock-wave/Wilson line formalism, designed for calculating the x-dependence of the quark and gluon hPDFs and the proton g1 structure function. These equations can be used to predict the contribution to the spin of the proton coming from the helicities of the small-x quarks and gluons. In this talk we will present the first-ever attempt to describe the world data on the g1 structure function at small x using the evolution equations derived the novel evolution equations within the JAM global analysis framework. Our results serve as a prediction for future measurements at the EIC and can be used to estimate the net amount of quark spin at small-x, ultimately bringing us one step closer to understanding the proton spin.
*This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics under Award Number DE-SC0004286.

Primary authors: ADAMIAK, Daniel; KOVCHEGOV, Yuri (The Ohio State University); MELNITCHOUK, Wally (Jefferson Lab); SIEVERT, Matthew (Rutgers University); PITONYAK, Daniel (Lebanon Valley College); SATO, nobuo (Jefferson Lab)

Presenter: ADAMIAK, Daniel

Session Classification: Small-x, Diffraction and Vector Mesons

Track Classification: Small-x, Diffraction and Vector Mesons