Simultaneous Global Analysis of Dihadron Fragmentation Functions and Transversity PDFs

Thursday, 22 June 2023 16:30 (30 minutes)

We propose a new definition of unintegrated dihadron fragmentation functions (DiFFs) which is compatible with the probability interpretation of collinear DiFFs and derive the leading-order evolution equations for these DiFFs. With these new definitions, we perform the first simultaneous extraction of DiFFs and transversity PDFs using data from semi-inclusive annihilation (SIA) in electron-positron collisions, semi-inclusive DIS, and proton-proton collisions. In particular, we include new SIA data from Belle that provides, for the first time, experimental constraints on the unpolarized DiFFs, as well as proton-proton data from STAR at center of mass energy 500 GeV. We present results for the transversity PDFs and tensor charge and explore the impact of theoretical constraints such as the Soffer bound and lattice computations of the tensor charge.

Primary authors: PROKUDIN, Alexei (Penn State Berks); METZ, Andreas (Temple University); COCUZZA, Christopher (Temple University); PITONYAK, Daniel (Lebanon Valley College); SEIDL, Ralf (RIKEN); MELNITCHOUK, Wally (Jefferson Lab); SATO, nobuo (Jefferson Lab)

Presenter: COCUZZA, Christopher (Temple University)

Session Classification: Session IV