

DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



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Study of the nucleon structure in Semi-Inclusive DIS off (un)polarized targets at COMPASS

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In operation since 2002, COMPASS is a fixed-target experiment located along the M2 beamline of the CERN SPS. One of the key measurements of its broad physics programme is the investigation of the transverse-momentum and transverse-spin structure of the nucleon, which has been pursued e.g. via measurements of Semi-Inclusive Deep Inelastic Scattering using a 160 GeV/c muon beam and transversely polarized and unpolarized proton and deuteron targets.

Data have been collected with a transversely polarized deuteron target first in 2002-2004; together with those collected in 2007 and 2010 on a transversely polarized proton target, they allowed extracting unique and very important information on the transversity and Sivers distribution functions. The unbalance in the statistics collected on deuteron and on proton target, reflected in a large uncertainty on the transversity PDF for the d -quark compared to the u -quark, is one of the main reasons behind the 2022 data taking with a transversely polarized deuteron target. In this talk, along with a review of the major results obtained from the previous measurements on polarized and unpolarized targets, projections of the statistical uncertainties of the freshly collected 2022 data sample will be presented for the first time.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

Primary authors: MARTIN, Anna (Trieste University and INFN (IT)); RIEDL, Caroline Kathrin (Univ. Illinois at Urbana Champaign (US))

Co-author: MORETTI, Andrea (Universita e INFN Trieste (IT))

Presenter: RIEDL, Caroline Kathrin (Univ. Illinois at Urbana Champaign (US))

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