

Transversity and Lambda polarization in polarized semi-inclusive DIS at COMPASS

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One among the several methods proposed to access the transversity function $h_1^q(x)$ in semi-inclusive DIS is the measurement of Lambda hyperons polarization, which can be quantified by studying the angular distribution of the proton emitted in the self-analyzing $\Lambda \rightarrow p \pi^-$ decay. The struck quark inherits the transverse polarization of the target with a proportionality factor given by the ratio of $h_1^q(x)$ with the unpolarized parton distribution function $f_1^q(x)$. The transverse polarization of the initial quark is transferred to the fragmenting final quark in lepton-quark hard scattering, thus the polarization of the Lambda, measured with respect to the final quark spin axis, can carry information on transversity. Nowadays transversity is already quite well known for u and d quarks as it has been extracted from Collins and dihadron asymmetries, so that a Lambda polarization different from zero can be used to infer a possible transversity distribution for the s quark $h_1^s(x)$, as well as information on the chiral-odd fragmentation function $H_1^{\{\Lambda, q\}}$. The results obtained in COMPASS using data collected with a transversely polarized proton target will be shown in this talk, together with possible interpretations and with perspectives for the future COMPASS deuteron run to be held in 2021.

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