

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



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Transverse Λ and $\bar{\Lambda}$ Hyperon Polarization Measurements at LHCb

Wednesday, 29 March 2023 11:10 (20 minutes)

Transverse Λ (uds) polarization observed over four decades ago contradicted expectations from early leading-order perturbative QCD calculations. Recent studies have linked the polarization to the process of hadronization, where hyperon polarization from unpolarized proton-proton and proton-nucleus collisions comes from either including higher-order twist-3 collinear multi-parton correlation matrix elements or convolution of a twist-2 transverse-momentum-dependent parton distribution function with a transverse-momentum-dependent fragmentation function. Measurements of hyperon polarization from unpolarized pp, pPb, and Pb p collisions, along with $e+e^-$ and semi-inclusive deep-inelastic scattering measurements can advance our understanding of this effect in QCD. The high energy of the LHC, which produces hyperons in abundance, and the coverage and precision measurement possibilities from LHCb's forward geometry will be ideal to study polarization of hyperons as a function of both p_T and x_F . The status of Λ and $\bar{\Lambda}$ polarization measurements performed for pPb and Pb p collisions, $\sqrt{s_{NN}} = 5.02$ TeV, at LHCb will be presented.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

Yes

Primary author: NUNEZ, Cynthia (University of Michigan (US))

Presenter: NUNEZ, Cynthia (University of Michigan (US))

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