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NLO calculations at small x

Thursday 10 April 2025 10:00 (20 minutes)

This talk reviews recent progress in next-to-leading order calculations for dilute-dense-processes in the small- x gluon saturation regime, especially for Deep Inelastic Scattering observables. A systematic formalism for such observables is provided by a combination of light cone perturbation for the dilute probe, combined with a Color Glass Condensate picture for eikonal scattering off the dense gluonic target. In particular we focus here on the recent calculation [1,2] of the diffractive DIS structure function, which is expected to be more sensitive to gluon saturation than inclusive DIS observables.

[1] G. Beuf, T. Lappi, H. Mäntysaari, R. Paatelainen and J. Penttala, “Diffractive deep inelastic scattering at NLO in the dipole picture,” *JHEP* **05** (2024), 024, [arXiv:2401.17251 [hep-ph]].

[2] G. Beuf, H. Hänninen, T. Lappi, Y. Mulian and H. Mäntysaari, “Diffractive deep inelastic scattering at NLO in the dipole picture: The qg contribution,” *Phys. Rev. D* **106** (2022) no.9, 094014, [arXiv:2206.13161 [hep-ph]].

Category

Theory

Collaboration (if applicable)

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