Chapter 8: current status

"BFKL and Saturation"

Authors:

JB: Introduction, BFKL part

Hannes Jung: Introduction, BFKL part, Forward di-jets

Cyrille Marquet: Drell Yan and saturation

Contents

BFKL — Madrigal Martinez et al; Ducloue et al. Szczurek et. al Safronov et al

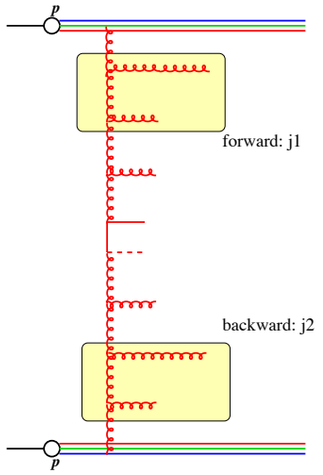
di-jets — Kutak et al

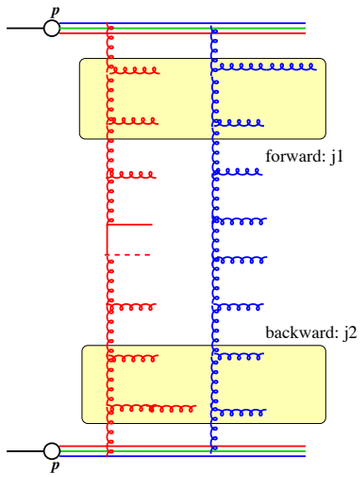
saturation — Oliveira Gay Ducati et al Lewandowska Peitzmann

high x — Brodksy

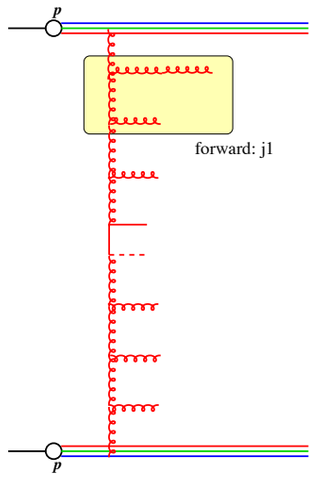
Introduction:

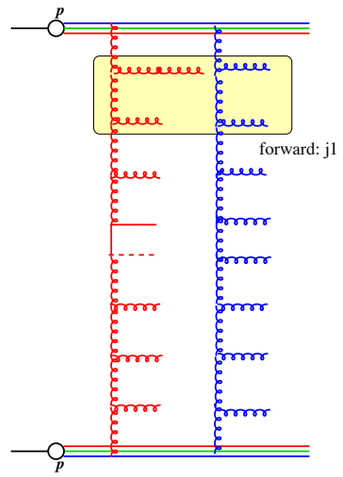
text for each topic and schematic overview



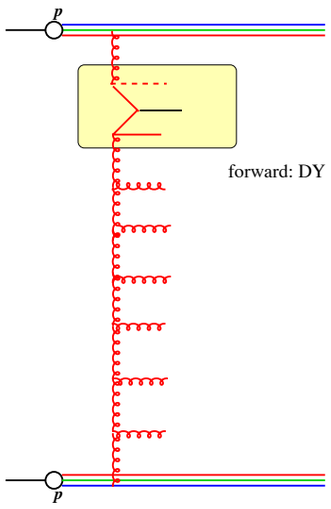


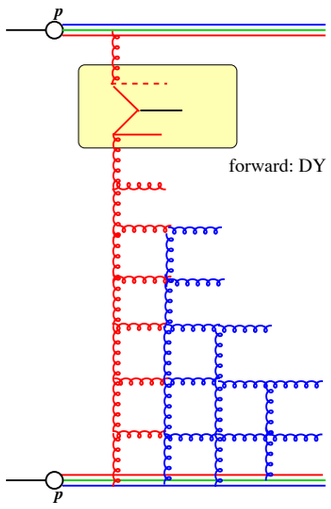
BFKL

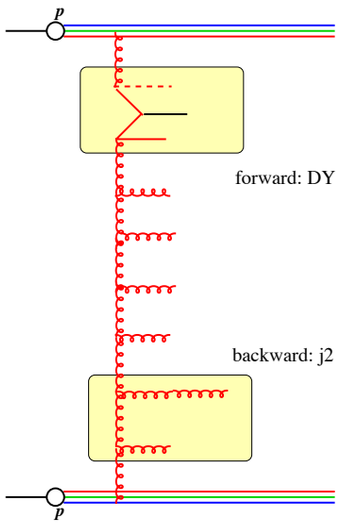


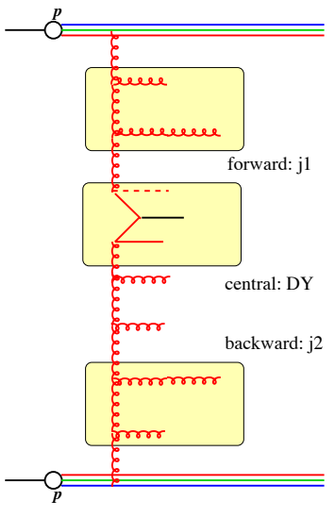


forward jets









Drell-Yan and saturation

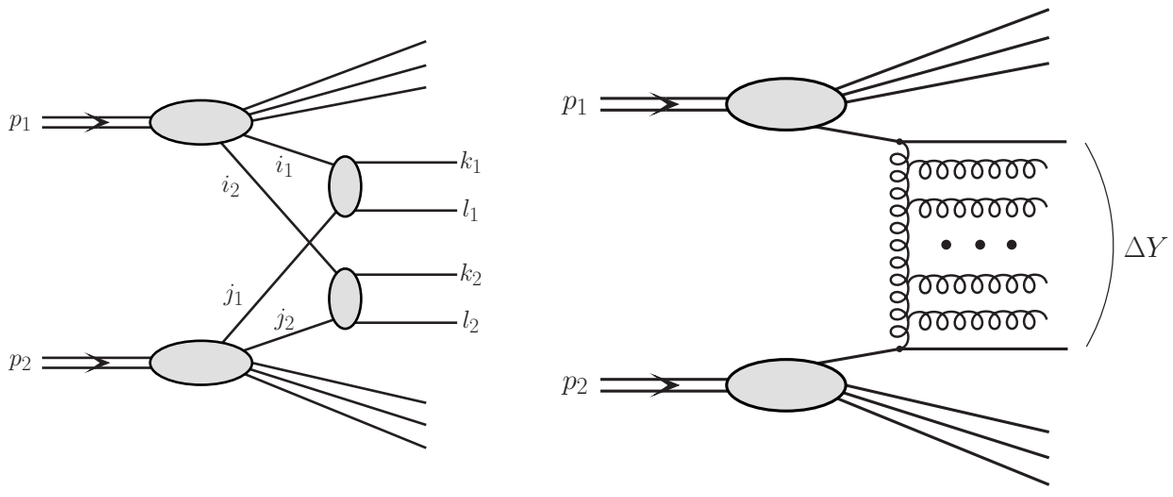
BFKL - part:

Motivation:
reggeized gluon as new d.o.f.,
BFKL also in electroweak (unitarity problem in WW) and gravity

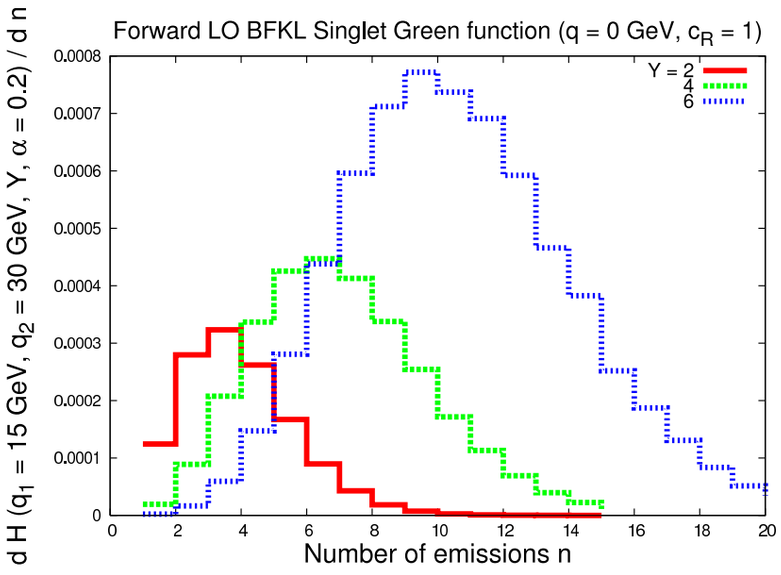
BFKL - signals based upon all-order summation:
importance of scales (small-x in DIS, MN-Jets),

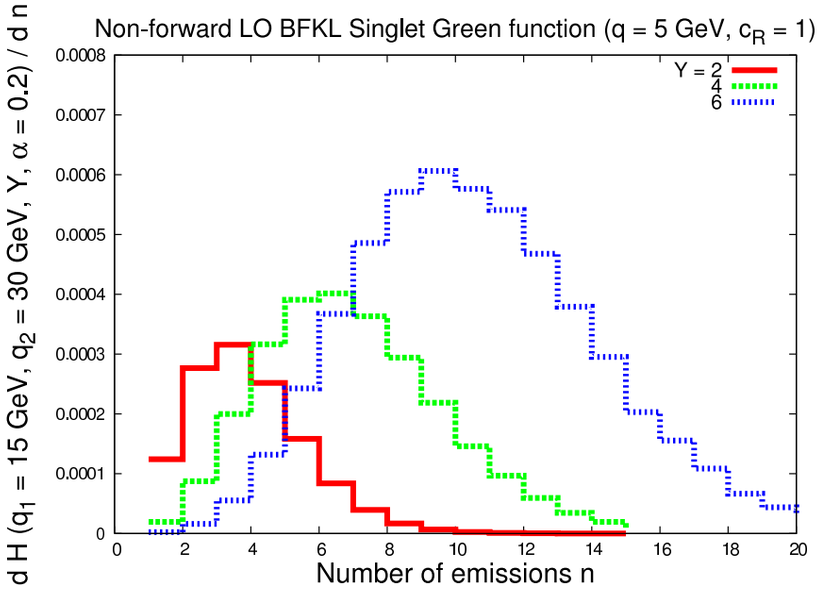
energy dependence (intercept)
angular decorrelations (C_0 and C_2/C_1 vs Y)

DPS-contributions (7 TeV,14 TeV, E-jet 35, E-jet=10)



BFKL - exclusive:
Comparison moments CCFM - BFKL
BFKL Monte Carlo





Comparison fixed-order vs. BFKL

Previous measurements, experimental aspects:

D0
CMS (inclusive to exclusive dijet ratio; azimuthal decorrelation)
ATLAS (azimuthal decorrelation)

RUNII expectations, note on experimental techniques

Part on Forward jets:

Key questions:
high energy factorization, unintegrated pdfs, saturation.

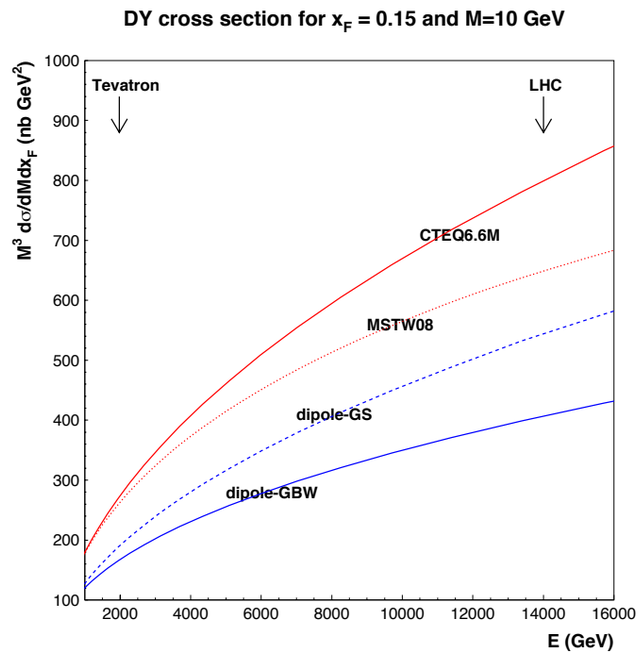
Di-jets (nuclear modification factor, saturation; Castor)
Tri-jets
Measurements at very large rapidities (Castor)

Drell-Yan and saturation:

Should have short introductory paragraph on motivation?

collinear approach,
formalism for color dipole

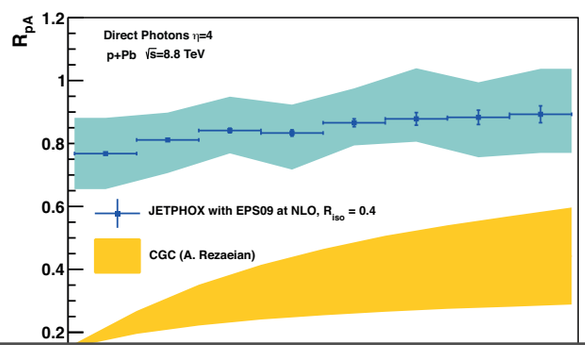
Compare both approaches for $M^2 d\sigma/dMdx_f$
(results for E772 data, predictions for LHC):
can discriminate.



Prospects in collinear approach:
determination of parton densities (scale uncertainties, higher twist, nuclear parton densities in pA)

Further prospects in small-x approach:
different saturation models (GBW, CGC),
spectra in p_T. Comparison with E866, Atlas.

Forward photoproduction and saturation:
nuclear modification factor with photons (FoCal at Alice)



Large -x region:

High x_F measurements allow studies of intrinsic heavy quarks

Still to be done:

Introductions (overall, partial)
conclusions (overall)
references, typos

Recent corrected version by Hannes, to be read