Our topics in HRJRG 2011

- Heavy quarkonium (J/Ψ, Upsilon) production and their polarization properties at the Tevatron and LHC
- Inclusive and jet associated prompt photon production at the LHC
- Drell-Yan pair production at the Tevatron and LHC
- Heavy quark production at the LHC

Our main goals in HRJRG 2011

- to obtain the correct predictions of kt-factorization approach for high-energy QCD processes
  - off-shell matrix elements calculations for specific processes
  - studying of theoretical uncertainties

- to compare the predictions with the LHC data

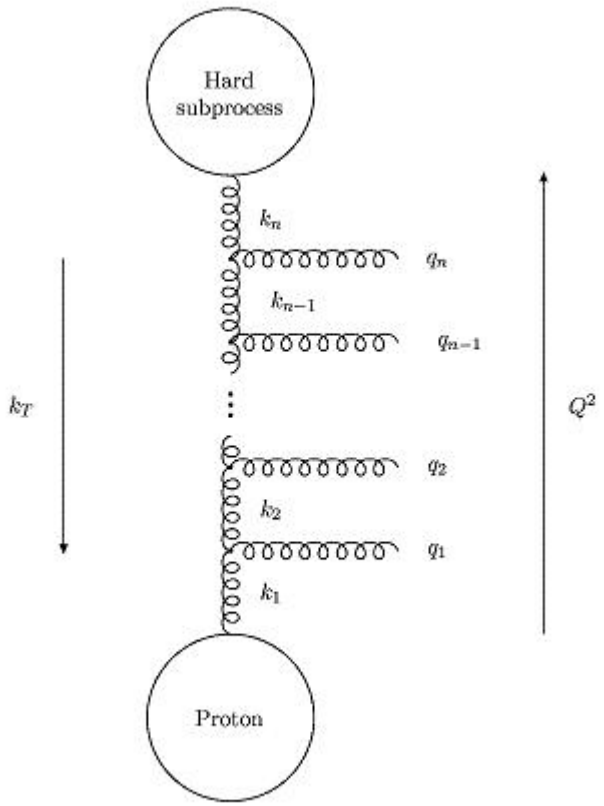
- to implement new processes to the Monte-Carlo CASCADE

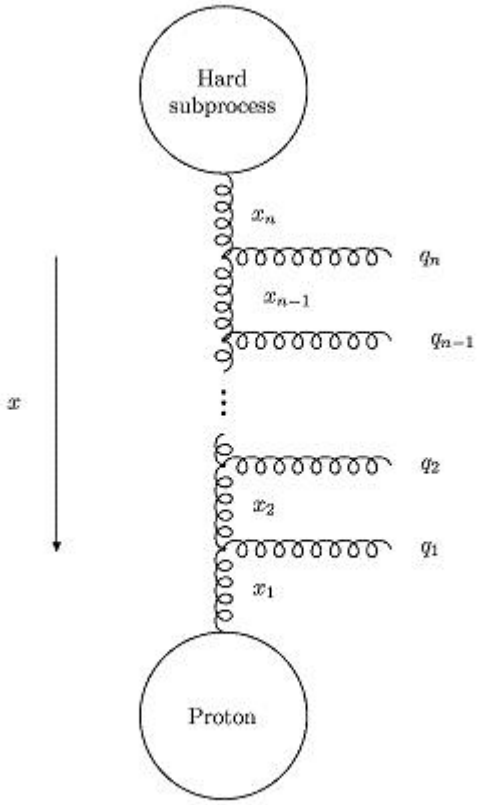
All studies will be processed in strong collaboration with Nikolai Zotov, Sergei Baranov, Maksim Malyshev, Hannes Jung and Mira Kraemer

Recent activities with kt-factorization

- Heavy flavour production at Tevatron and parton shower effects
  H. Jung, M. Kraemer, A.V. Lipatov, N.P. Zotov, 2010
- Prompt photon production at HERA (photo-production and DIS)
  S.P. Baranov, A.V. Lipatov, N.P. Zotov, 2010
- Inclusive W/Z boson production at Tevatron and LHC
  S.P. Baranov, A.V. Lipatov, N.P. Zotov, 2008 - 2009
- Prompt photon hadro-production at Tevatron (both inclusive and in association with the heavy quarks or their decay muons)
  S.P. Baranov, A.V. Lipatov, N.P. Zotov, 2008 - 2009
- Higgs + bb and Higgs + tt production at Tevatron and LHC
  A.V. Lipatov, N.P. Zotov, 2009

Two different types of parton evolution





Recent activity in HRJRG with kt-factorization

- Prompt photon production at HERA, Tevatron and LHC
- W/Z production at Tevatron and LHC
- Higgs + bb or Higgs + tt production at Tevatron and LHC
- Heavy flavour production at the Tevatron and parton shower effects

DGLAP

- strong ordering in Q^2
- resummation of the terms ~ $\ln Q^2$
- no kt of incoming partons
- on-shell hard matrix elements

BFKL

- no ordering in kt
- resummation of the terms ~ $\ln 1/x$
- non-zero kt of incoming partons
- unintegrated (kt-dependent) parton densities
- off-shell hard matrix elements

collinear factorization

kt-factorization

Small-x Collab., EPJ C 25, 77 (2002); EPJ C 35, 67 (2003); EPJ C 48, 53 (2006)