



# Summer Seminar

11 July 2006, 17:00, DESY Hörsaal

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## *HERA impact for QCD dynamics at LHC and beyond*

The three dimensional structure of the proton at different resolution scales is extracted from HERA data. The lessons learned from QCD--based studies of hard scattering phenomena in high--energy ep/pp collisions at HERA and Tevatron and deuteron-gold collisions at RHIC are summarized, with the aim of making predictions for the LHC. A new dynamical effect predicted at high energies is the black disk (unitarity) limit in the interaction of a small dipole with hadronic matter, due to the fast increase of the gluon density at small  $x$ . In hadron--hadron scattering at LHC energies and beyond (cosmic ray physics near GZK), this effect will be a standard feature of the dynamics, leading to strong modifications of the structure of the final states at forward and central rapidities in central pp collisions and in particular in the production of new heavy particles. This also affect the interpretation of the composition of cosmic rays near the GZK cutoff.

- Tea and cookies will be served at 16:45 in the lobby.
- After the seminar there is a chance for private discussions with the speaker over wine and pretzels also in the lobby.