

HERA – LHC workshop



HERA AND THE LHC
A workshop on the implications of HERA for LHC physics

March 2004 - January 2005

Parton density functions
Multijet final states and energy flow
Heavy quarks
Diffraction
Monte Carlo tools

Startup Meeting
March 26-27 2004
Midterm Meeting
11-13 October 2004
CERN, Geneva
Final Meeting
January 2005
DESY, Hamburg

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Aims of the workshop:

- To identify and prioritize those measurements to be made at HERA which have an impact on the physics reach of the LHC
- To encourage and stimulate theory and experimental efforts
- To increase the quantitative understanding of the implication of HERA measurements for LHC physics

Final Meeting
21-24 March 2005, DESY

HERA physics and the LHC

- Measurement of parton distributions to interpret LHC data and determine parton luminosities to 1%
 - *need measurement at HERA with high precision and high luminosity (large x)*
- Measurement of gluon and (heavy) quark distributions for Higgs production
 - *need precise gluon distribution at large and small x (F_L measurement)*
 - *measurement of sea quarks at large x and heavy quark (bottom) density*
- Accurate measurement of final states to describe parton radiation, multiple scatterings and underlying event structures, also for Higgs production
 - *precise measurement of small x*
 - *non-linear effects (parton saturation) multi-jet production and jet correlations*
- Understanding of diffraction potentially important for Higgs production in a clean experimental environment (similar to LC)
 - *need precise F_2^D measurement especially at large Q^2 and large beta*
 - *experimental issues: rapidity gaps, forward proton spectrometers*
- Simulation of multi – parton (particle) production
 - *develop of Models and MC generators under controllable conditions at HERA*