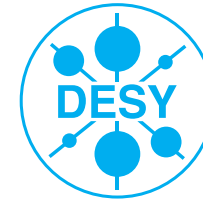


# Experimental Activities

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## Achieved during the Last Year

- 1) Finalization of the H1 low  $Q^2$  data (within H1 experiment)
  - submitted two publications of HERA-I data for  $Q^2 < 150 \text{ GeV}^2$
  - experimental precision  $\sim 1.5\%$
  - QCD fit with some assessment of parameterization uncertainty
  - First publication of FL data
  - Extension of FL result to low  $Q^2$ , preliminary release for DIS-09

Meeting: Analysis Center Groups, Management Board, DESY Directorate, May 4th 2009

- 2) HERA reduced cross section combination, QCD fit  
 (with H1 and ZEUS experimental groups, meetings at DESY ~1 per month)  
 - released herapdf 0.1, preliminary herapdf 0.2 (DIS 09 conference), goal to publish H1ZEUS1.0 set in summer 2009  
 - continue with combination of HERA-II data.  
 - extension beyond inclusive cross section.
- 3) PDF4LHC workshop and HERALHC workshop ( experiment/theory joint effort to estimate PDF errors for LHC needs, representing HERA exp., meetings: few per year).  
 - study of impact/evaluation of experimental uncertainties, studies of parameterization uncertainty.  
 - publication of HERALHC proceedings.

## Identified Problems, Plans

- higher order QED radiative corrections are ~ with combined H1-ZEUS data precision.

Preliminary discussions with Bardin et al. Dubna group, expression of interest. About ~3 months of joint experiment/theory work ( early 2010 ? Before the ultimate H1-ZEUS

combination).

- open source QCD fitting package. So far limited to H1-based software which can not be used for CMS/ATLAS analyses.

A postdoc position to develop, support the open source fitting package.

Flexibility of the evolution/minimization/error propagation codes.

Requires knowledge in statistics, theory. Integration in CMS/ATLAS together with MC group (?)

- parameterization uncertainty is one of the leading error sources for PDFs. Theory motivated input shapes of PDFs may help to reduce this uncertainty.

- Zoltan Nagy expressed interest to develop/support alternative to LHAPDF package, for more flexibility using multiple PDFs.

- Together with MC group, develop a MC reweighting tool to re-weight LO→NLO MC simulations. Preliminary discussion with Bardin et al. group. High impact on SM LHC analyses.