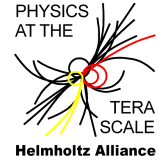


Parton Distribution Working Group.

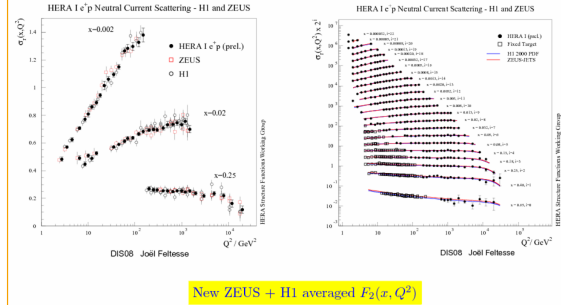
Convenors: J. Blümlein, A. Glazov, S.-O. Moch



Mission

- provides training on all aspects concerning pdfs and inclusive hard scattering processes in ep and pp reactions; annual schools, topical workshops
- supports the final analyses of HERA data w.r.t. to the extraction of pdfs
- coordinates comparisons of different pdf analyses to refine the understanding of pdfs and their errors, including $\alpha_s(M_Z^2)$
- provides further theoretical calculations needed to improve ongoing ep and pp analyses
- will provide a platform to analyze inclusive hard scattering data at the LHC (DY, $t\bar{t}$, Higgs-production) to refine the understanding of the pdfs
- will provide an open-source code for NNLO structure function and pp inclusive hard scattering process analyses to extract pdfs

Combined Fits: H1 + ZEUS

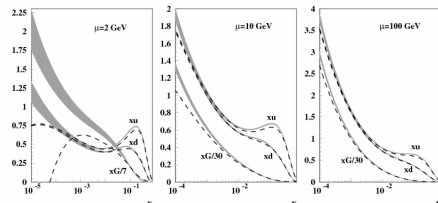


New ZEUS + H1 averaged $F_2(x, Q^2)$

Flavor distributions: light quarks (NNLO)

Current Fitting Community (NNLO): ABKM, JR, A, MSTW

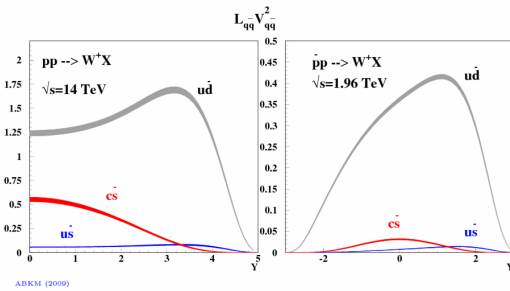
+ Many NLO analyses worldwide: CTEQ, NNPDF, H1, ZEUS, ...



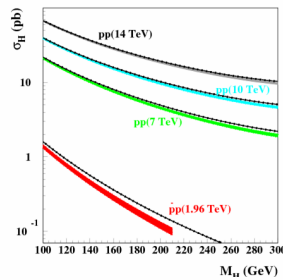
S. Alekhin, J.B., S. Klein, S. Moch, DESY 09-102; Correct treatment of HQ very essential: FFNS, BSMN-schemes; full lines: ABKM error band; dashed lines: MSTW08

Some Predictions for Tevatron and the LHC

Drell-Yan Process (NNLO)



Higgs Cross Section in $pp(\bar{p})$ scattering at (NNLO)



bands: ABKM (2009); lines: MSTW08

- LHC has a great potential to limit the gluon distribution.

$\alpha_s(M_Z^2)$

$$\frac{\delta\alpha_s(M_Z^2)}{\alpha_s(M_Z^2)} \approx 1.2\%$$

	$\alpha_s(M_Z^2)$	
ABKM	0.1135 ± 0.0014	HQ: FFS $N_f = 3$
ABKM	0.1129 ± 0.0014	HQ: BSMN-approach
BBG (2006)	$0.1134^{+0.0019}_{-0.0021}$	valence analysis, NNLO
JR (2008)	0.1124 ± 0.0020	dynamical approach
MSTW (2008)	0.1171 ± 0.0014	
BBG (2006)	$0.1141^{+0.0020}_{-0.0022}$	valence analysis, N ³ LO

Work Plans for the Next Time

- NNLO analysis of the DIS world data including the combined H1+ZEUS data; special investigation of gluon-sensitive observables
- Provide controlled NLO Data sets for LHC process simulations including correct HQ effects
- Implementation of the NNLO Heavy Flavor Effects
- Detailed Code Comparisons between NNLO global fitters
- Development of the fast Open Source Evolution Code
- The PDF-WG invites all interested Experimental and Theory Teams to join in the vast work to be done at the different construction places.