

Benchmark Partons

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HERA-LHC benchmark

[see also R. Thorne's talk @ HERA-LHC may08]

Experimental data

$$Q^2 > 9 \text{ GeV}^2, W^2 > 15 \text{ GeV}^2$$

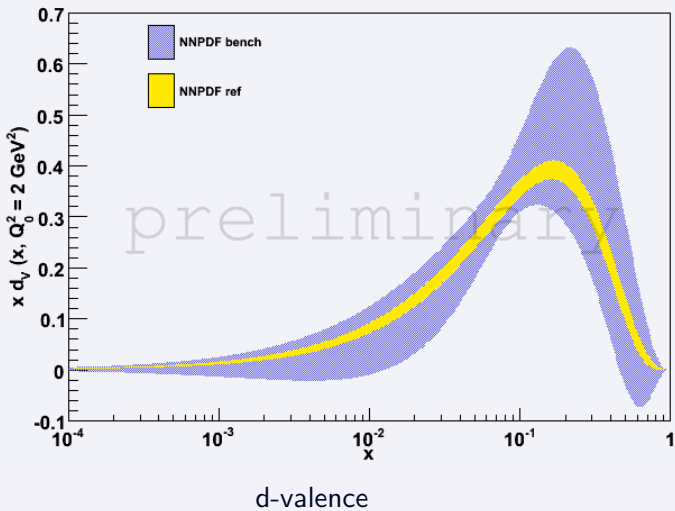
Name	Data points	Target
NMC_pd	73	F_2^d / F_2^p
NMC	95	F_2^p
BCDMS	322	F_2^p
ZEUS97	206	F_2^p
H1x97	77	F_2^p
Total	773	

Theoretical assumptions

$$\text{Sum rules} + F_L > 0$$

Evolution	Iterated
Pert. Order	NLO
Q_0^2 (GeV ²)	2
Heavy Quarks	ZM-VFN
m_c (GeV)	1.4
m_b (GeV)	4.5
α_s (M _Z)	0.119
PDFs	Σ, g, T_3, V
$C_s = \frac{s+\bar{s}}{\bar{u}+d}$	0.5

HERA-LHC benchmark



H1 benchmark

[see also V. Radescu's talk @ PDF4LHC feb08]

Experimental data

$$Q^2 > 2 \text{ GeV}^2, W^2 > 12.5 \text{ GeV}^2$$

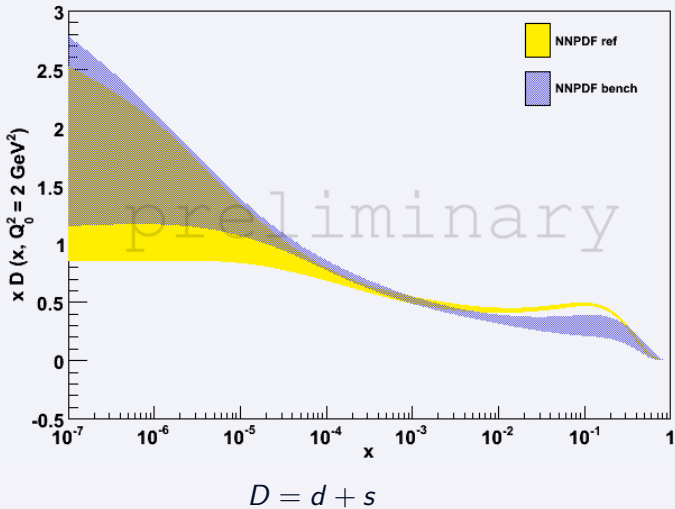
Name	Data points	Target
H1lx97	80 + 55	$\tilde{\sigma}^{NC,+}$
H197	130 (25)	$\tilde{\sigma}^{NC(CC),+}$
H199	126 (28)	$\tilde{\sigma}^{NC(CC),-}$
H199hy	13	$\tilde{\sigma}^{NC,-}$
H100	147 (28)	$\tilde{\sigma}^{NC(CC),+}$
Total	632	

Theoretical assumptions

$$\text{Sum rules} + F_L > 0$$

Evolution	Iterated
Pert. Order	NLO
$Q_0^2 (\text{GeV}^2)$	2
Heavy Quarks	ZM-VFN
$m_c (\text{GeV})$	1.4
$m_b (\text{GeV})$	4.5
$\alpha_s (M_Z)$	0.1185
PDFs	$\Sigma, g, T_3, V, \bar{d} - \bar{u}$
$C_s = \frac{s+\bar{s}}{\bar{u}+\bar{d}}$	0.5

H1 benchmark



defining a minimal standard

given a PDF set:

1. compare the evolution with Les Houches tables;
2. perform benchmarks;
3. predict standard candles;
4. deliver with LHAPDF;
5. anything else?

defining a benchmark

inputs:

- ▶ how many benchmarks?
- ▶ which data?
- ▶ which assumptions?
- ▶ anything else?

outputs:

- ▶ what do we expect from error bands?
- ▶ what do we expect from incompatible data?
- ▶ which is the dependence on the parametrization?
- ▶ which is the dependence on the minimization?
- ▶ how can measure of the distance between fits?
- ▶ anything else?