

List of deliverables LHeC (and when possible FCCeh)

Not Complete

● Simulated data

M. Klein

- Inclusive deep inelastic scattering
- Cross sections and structure functions simulation and uncertainties
 - Neutral current
 - Charged current
 - Strange
 - Charm and beauty production
 - top?
 - jet data?

● Physics at small x [studies by Anna, Nestor, Fred et al](#)

- Low-x physics perspectives at the LHC:
 - saturation models
 - TMDs
 - Nuclear targets
- Synergy LHC/EIC / neutrinos

● Determination of parton distributions

[studies by V.R., A. Guffanti
Claire, Mandy, ...
\(via xFitter\)](#)

- QCD fit ansatz
- Valence quarks
- sea quark decomposing
- top quarks
- gluon PDF

● α_s uncertainty determination .

● Determination of the charm mass parameter in VFN schemes

[studies by R. Placakyte](#)

- study of the HVFNS differences
- Intrinsic heavy flavour

● Electroweak physics:

- sin theta
- quark couplings
- W mass?

[studies by C. Gwenlan, D. Britzger](#)

[studies by S. Camarda](#)

Tools:

- xFitter
- Alpos
- Oxford fit
- low x/nuclear tools

Remarks

- LHeC different scenarios
 - $E_p = 7 \text{ TeV}$, $E_e = 60 \text{ GeV}$
 - $e+p$ ($P=0$), $e-p$ ($P=-/+ 80$)
 - deuteron vs proton
- Evolving knowledge:
 - Need for consistent studies
 - (different assumptions assumed at different stages of studies)
 - address the question of what would happen without LHeC vs HL LHC and FCC?
 - Store the data / studies in a repository (dated)
 - Share codes (e.g. steering files can be stored in xFitter, etc...)
- FCC eh different scenarios:
 - so far only inclusive data has been simulated
- Next meetings: (doodle?)
 - 20.03.2017 - xFitter meeting in Oxford (Monday): 5PM GMT time?
 - 28.03.2017 - special meeting for DIS preparations?
 - 11.04.2017