Status Report:
Fitting uPDFs to F_2 and F_2^{charm}

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H1 collaboration
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Overview

- Fitting Method
- Data vs. Monte Carlo
- Gluon Densities from F_2 and F_2^{charm}
- Appendix: geometrical scaling
- Summary

Unintegrated Gluondensities – Fits to F_2 and F_2^c

Fitting method:

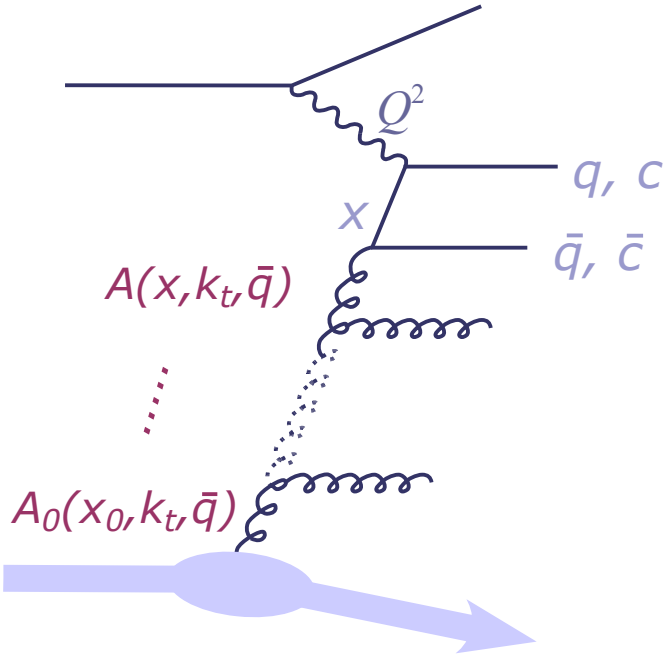
- CCFM implemented in Monte Carlo simulation CASCADE
- Starting distribution:

$$A_0(x,k_t,\bar{q}) \sim Norm \cdot \left(\frac{1}{x}\right)^{pow0} \cdot (1-x)^{pow1}$$

- Choose starting values for parameters *Norm*, *pow0* and *pow1*
- Calculate deviation of MC from Data:

$$\chi^2 = \left(\frac{\text{Data} - \text{Theory}}{\text{Error}}\right)^2$$

- Minimize χ^2 by repeating simulation in every minimization step

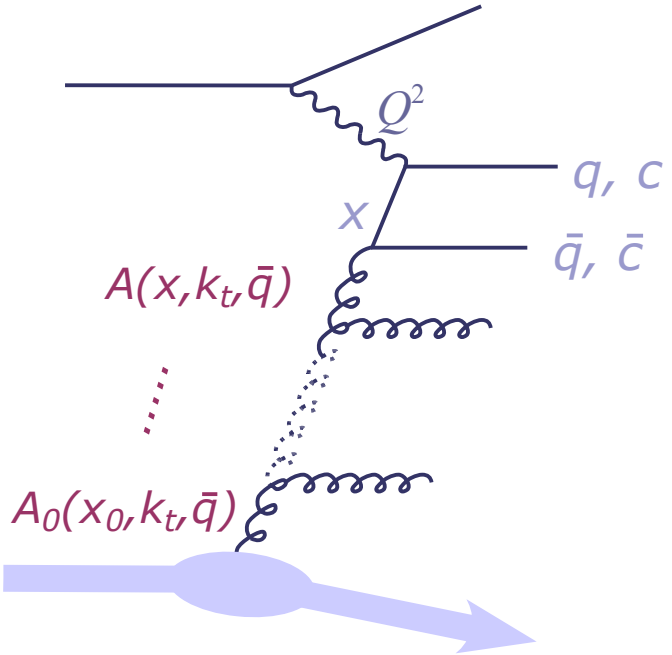


Unintegrated Gluondensities – Fits to F_2 and F_2^c

Results:

- Fit to F_2 gives $\chi^2/ndf = 2.02$
- Fit to F_2^c gives $\chi^2/ndf = 0.85$

  ➔ Very good agreement with Charm Data from H1



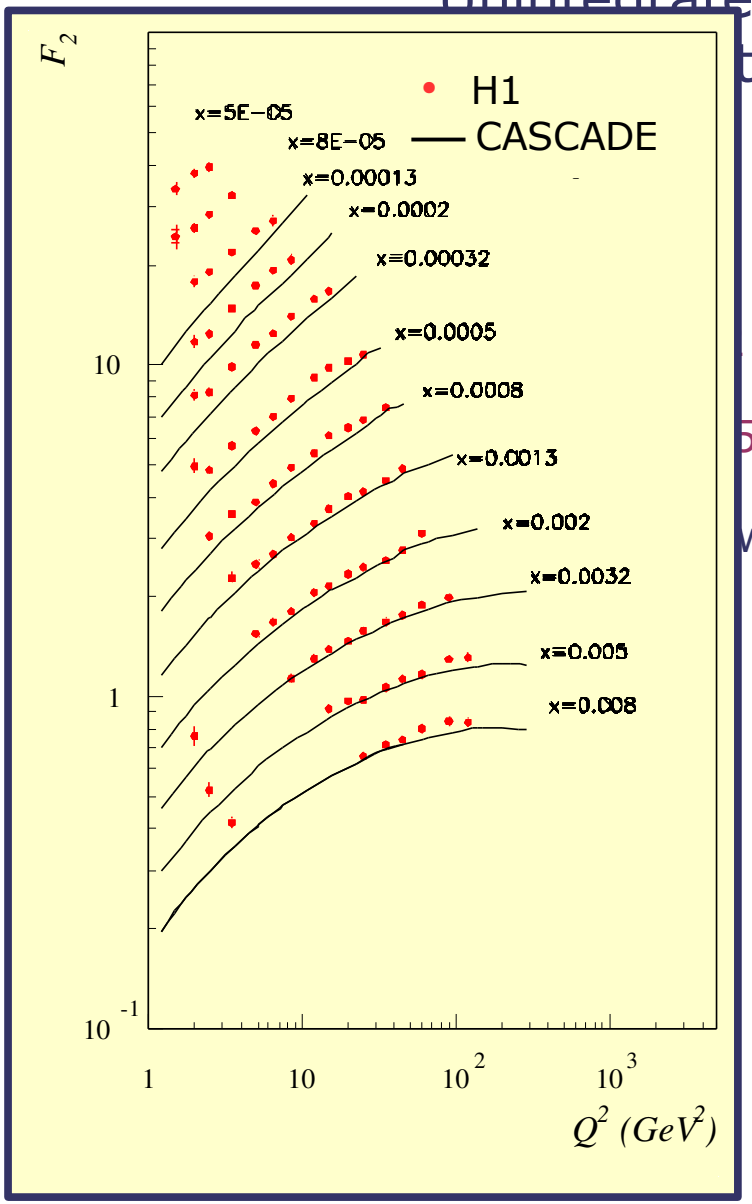
Unintegrated Gluondensities – to F_2 and F

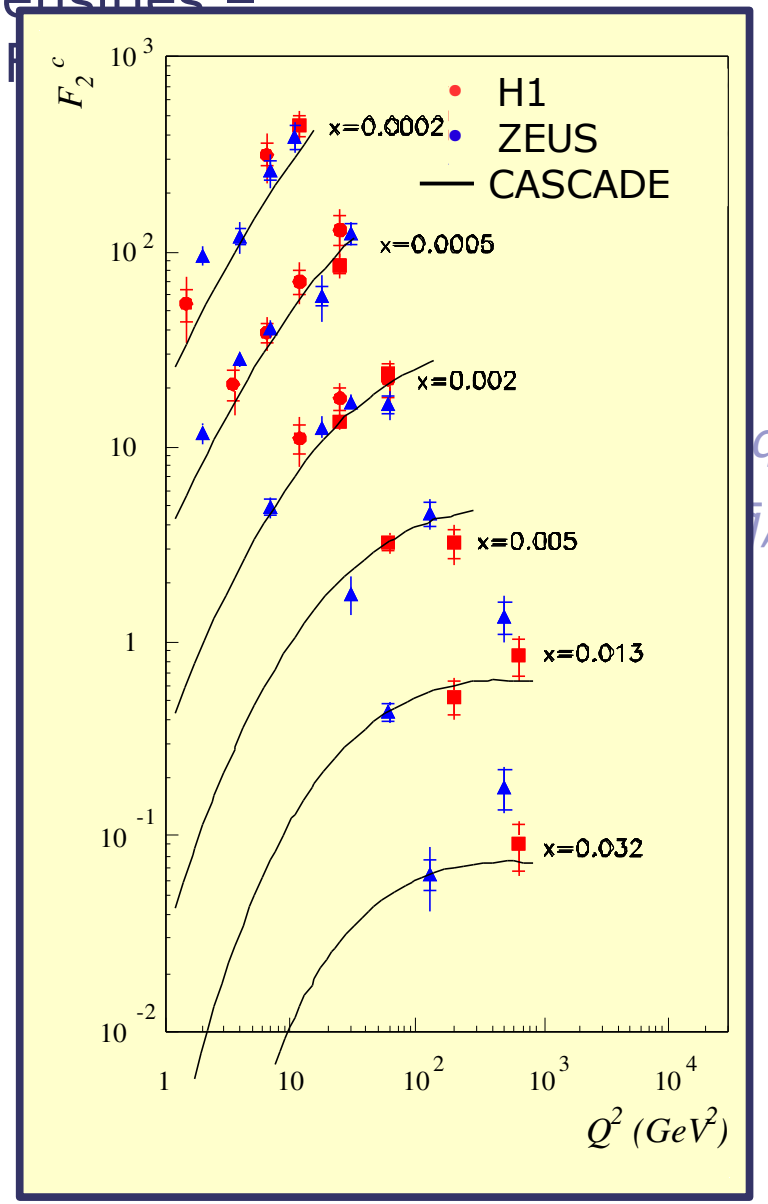
5

with Charm

q, c

$\bar{q}$, $\bar{c}$





Unintegrated Gluondensities – Fits to F_2 and F_2^c

Results:

- Fit to F_2 gives $\chi^2/ndf = 2.02$
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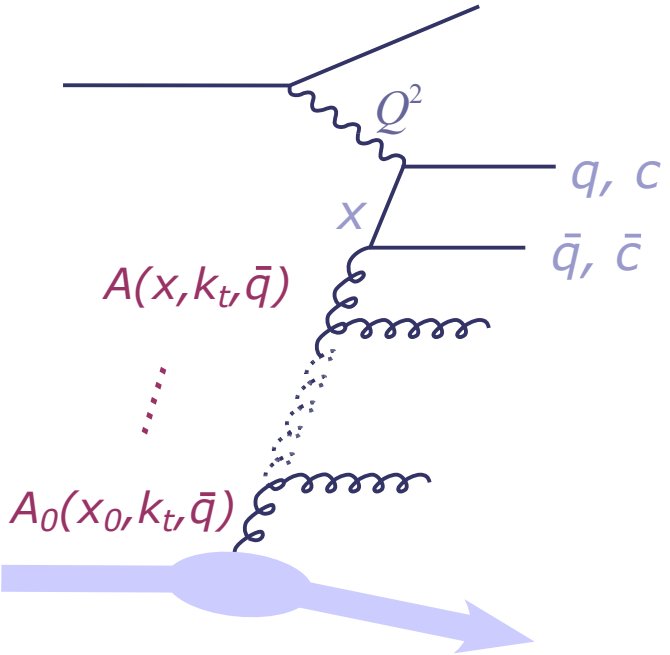
  - ➔ Very good agreement with Charm Data from H1
- AND: F_2 and F_2^c give very different gluon densities



Unintegrated Gluondensities –

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- Fit to F_2^c
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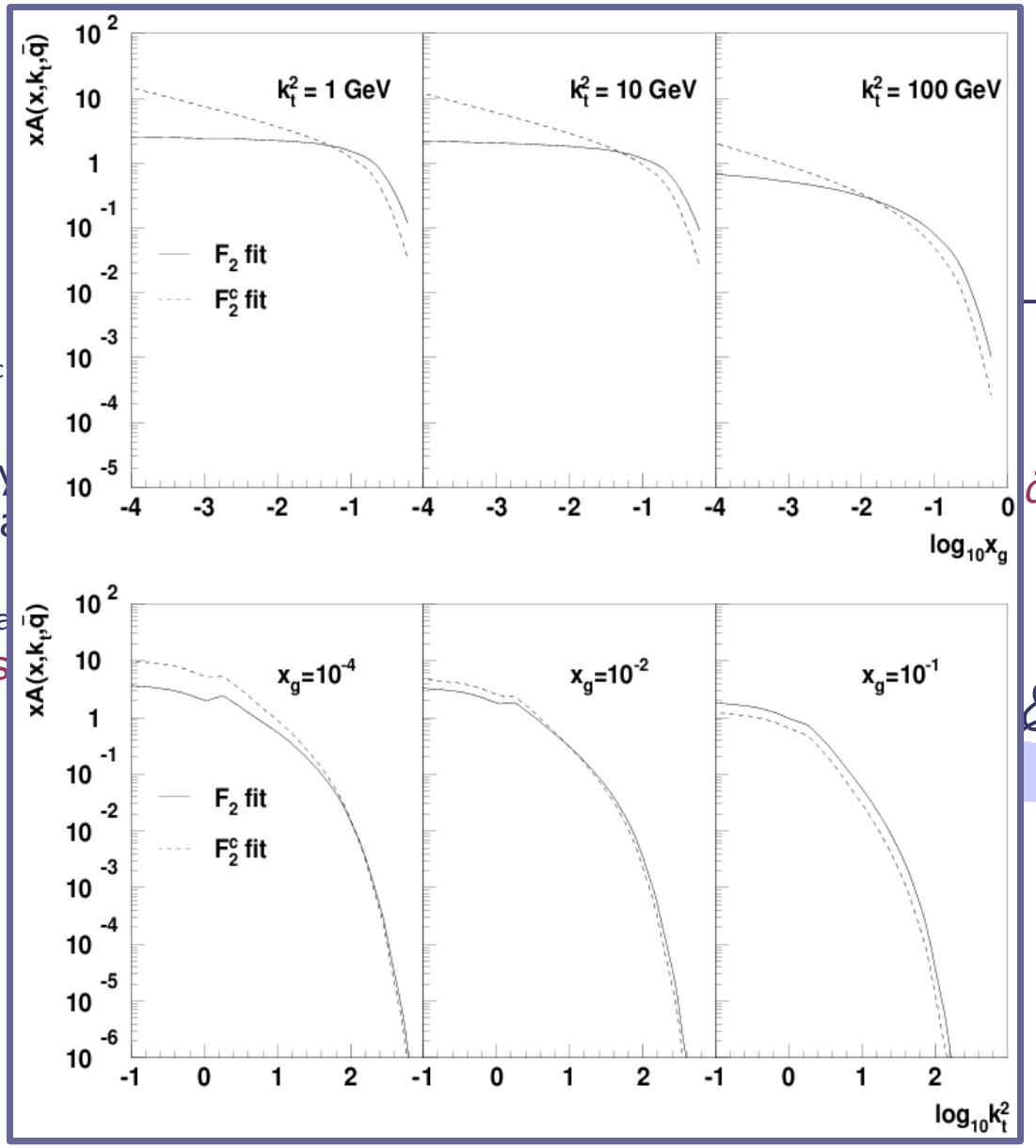
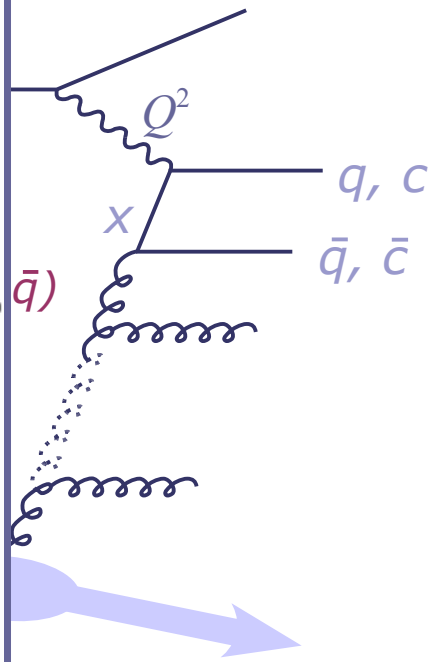
  densities





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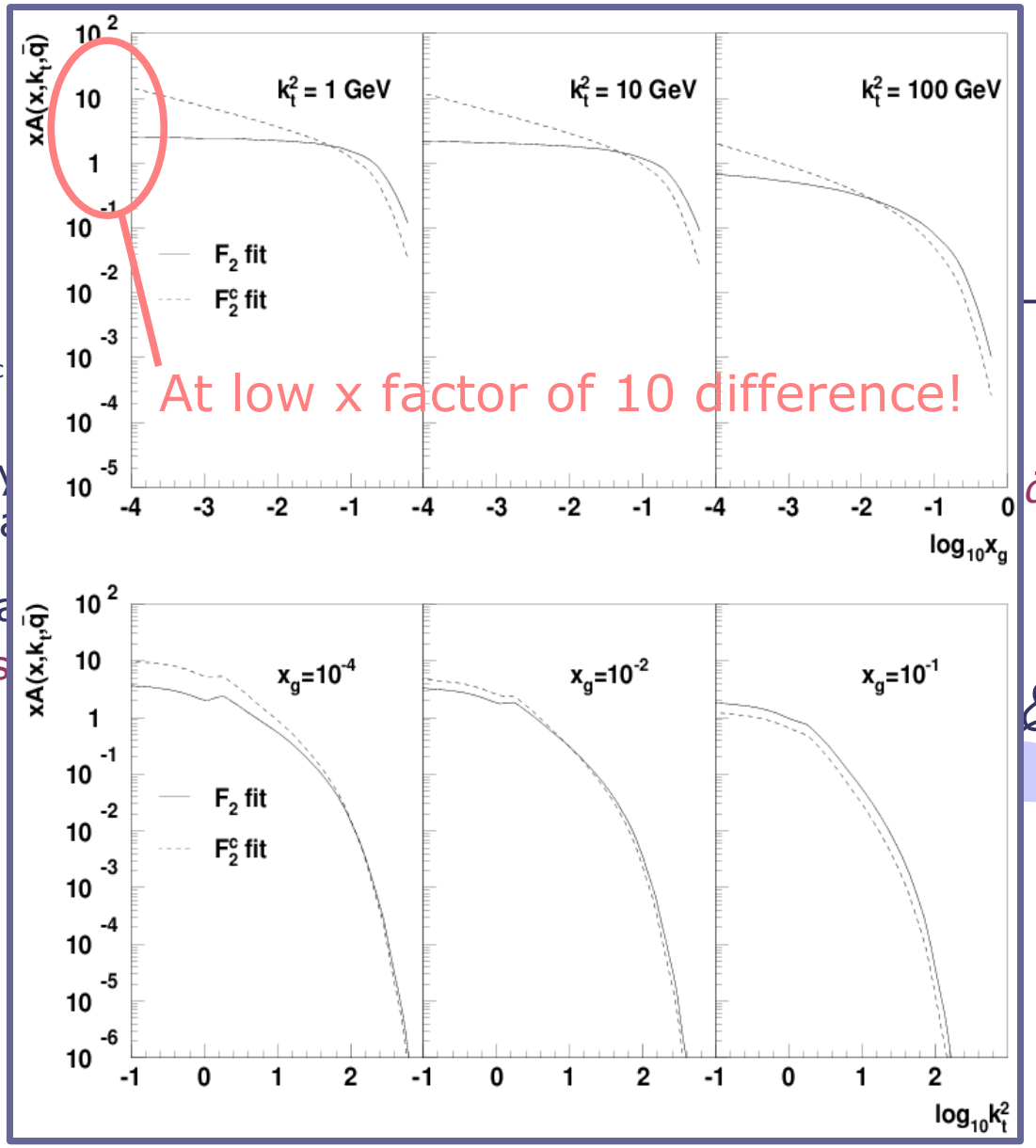

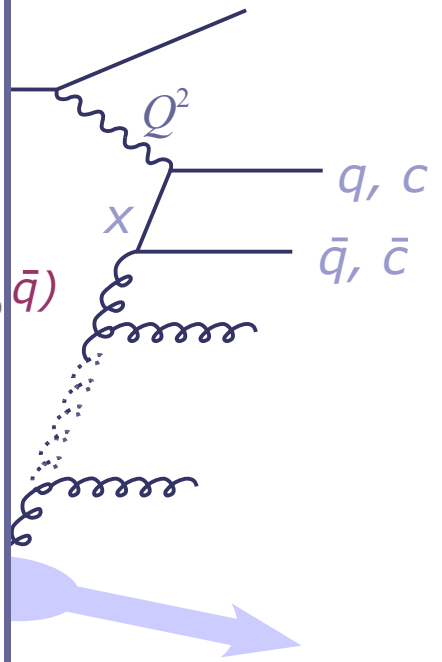

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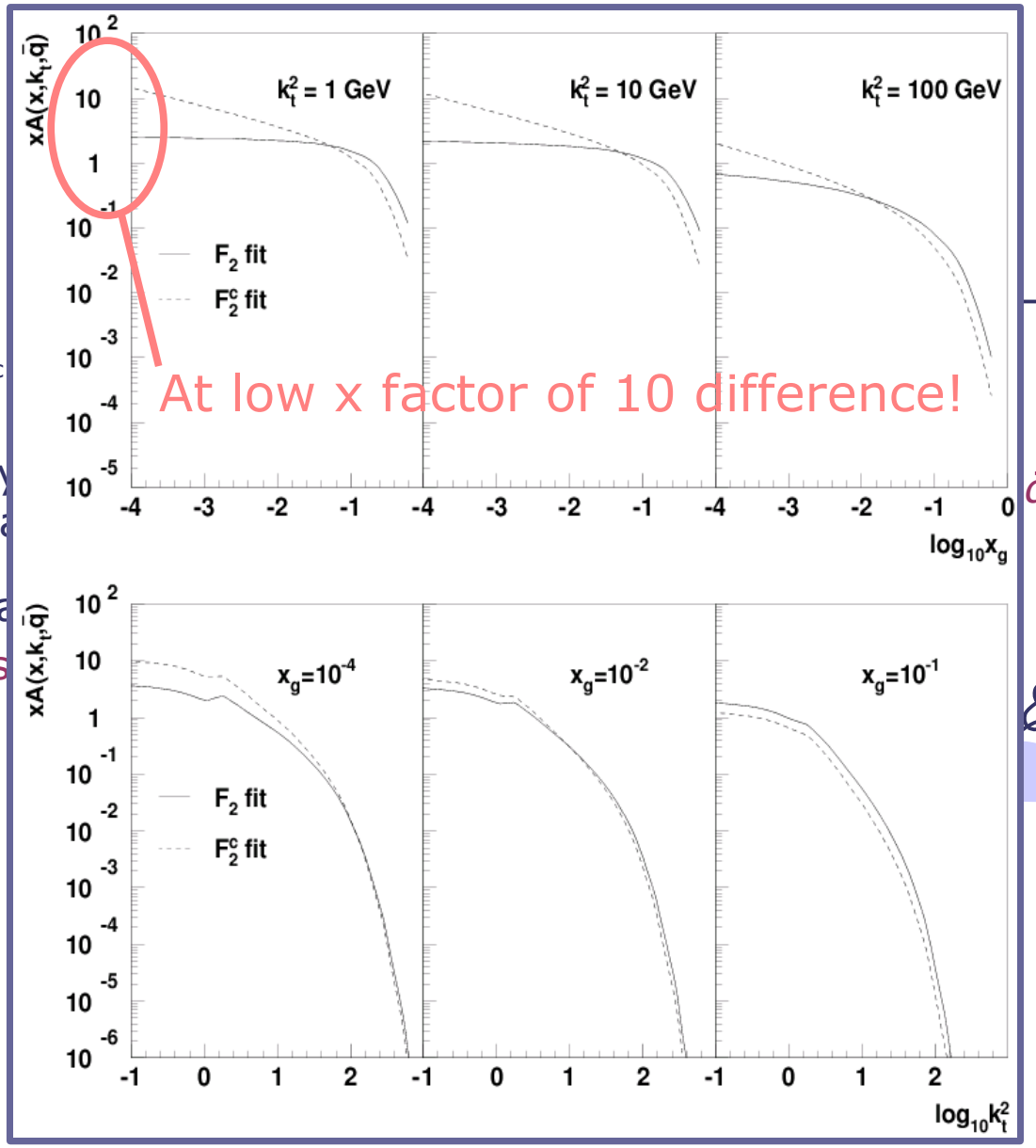
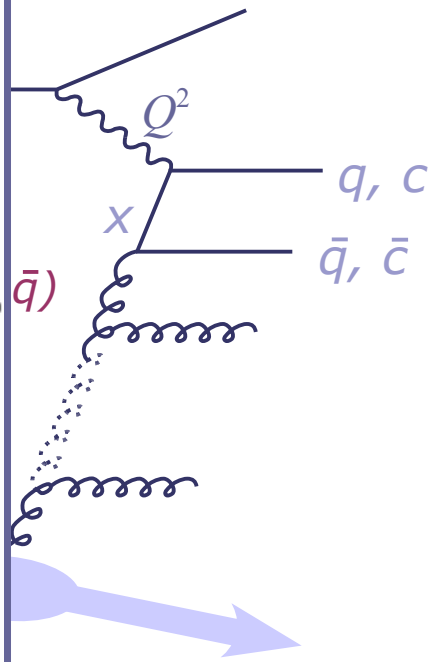
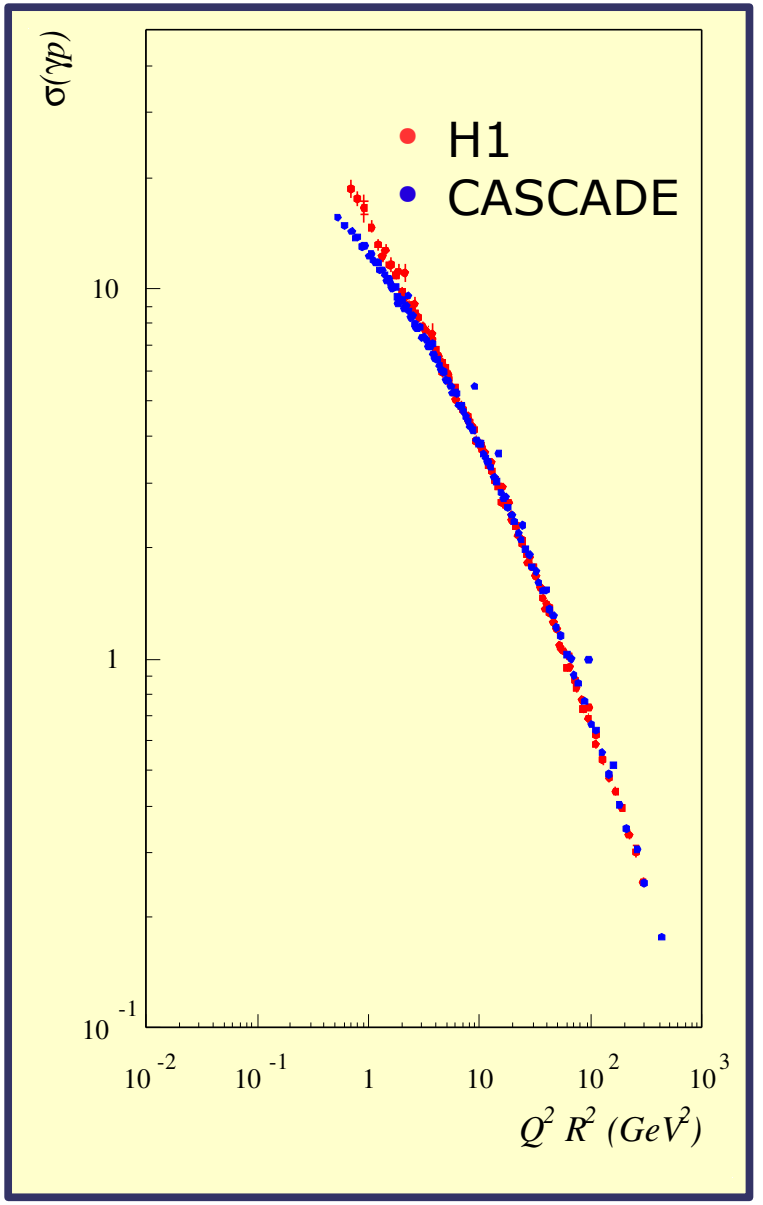
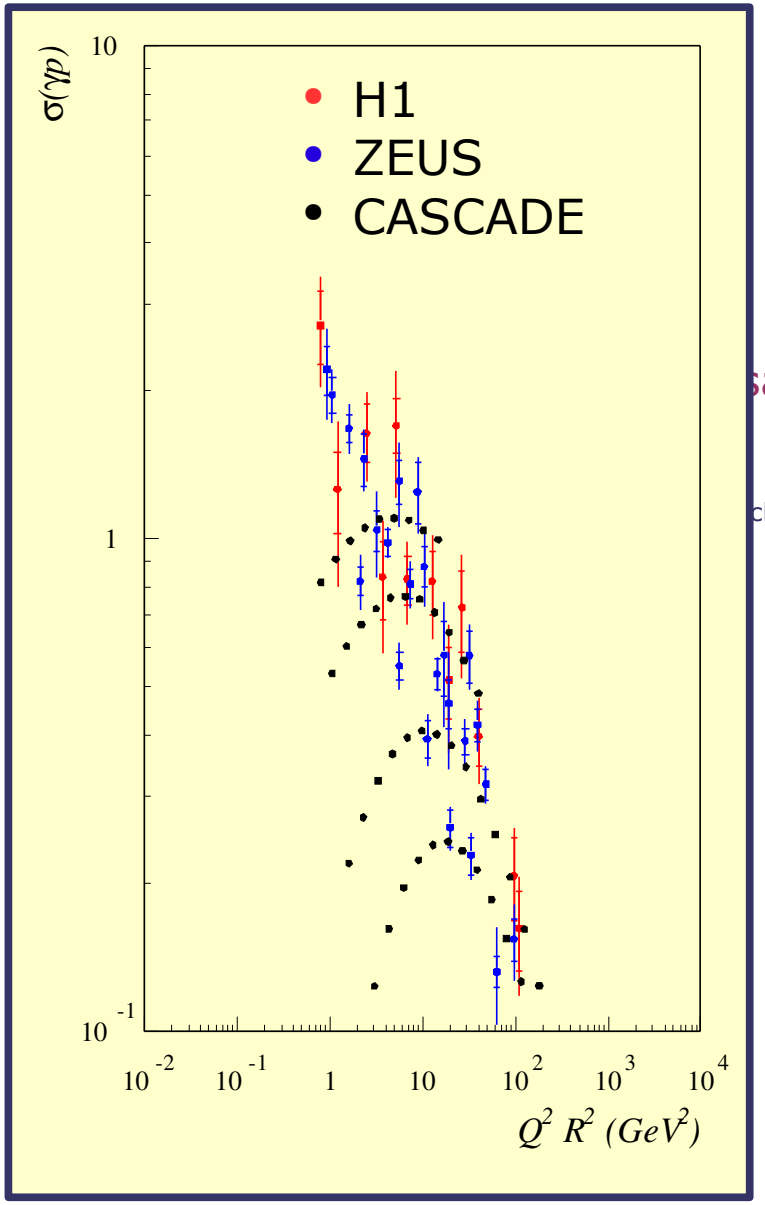




Appendix: Geometrical Scaling

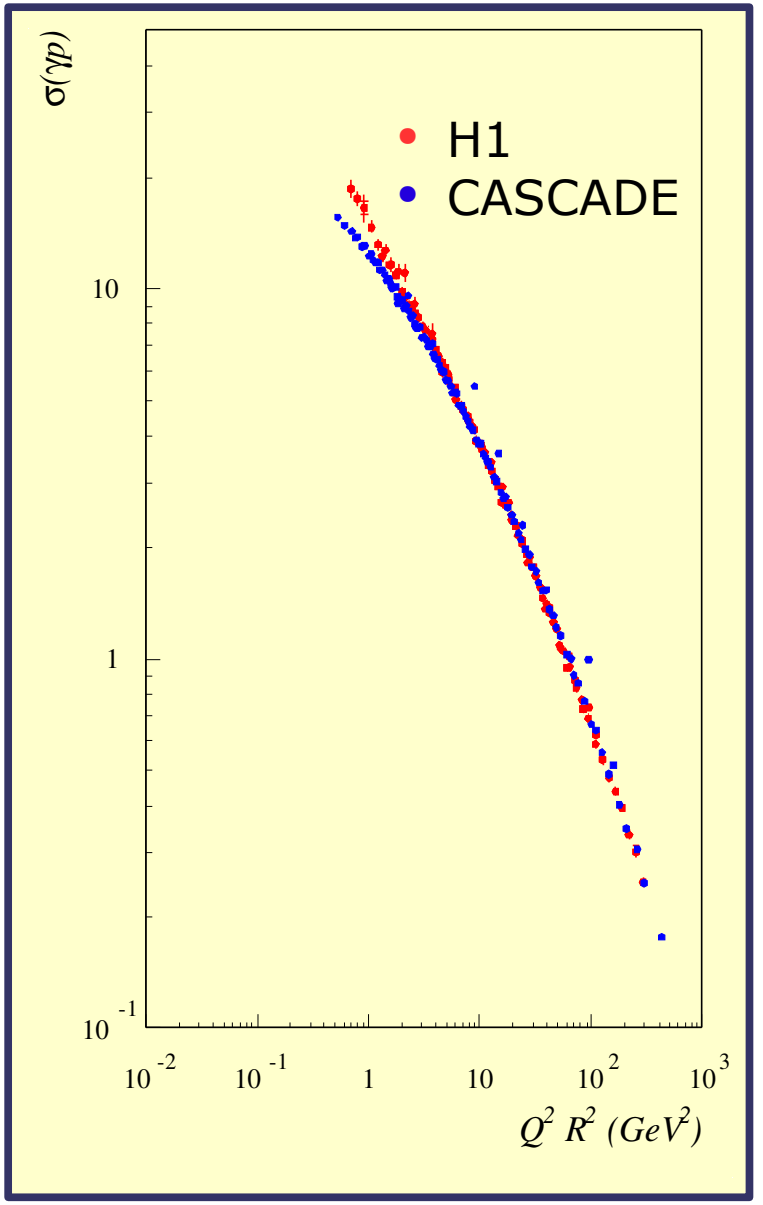
- F_2 as function of Q^2/Q_s^2
  - ➔ Geometrical scaling with saturation scale
- Geometrical scaling also for F_2^{charm} ?





saturation

charm ?



Summary

- Good Fit to F_2^{charm} possible
- Significant difference between uPFDs from F_2 and F_2^{charm}
  - ➔ Note: Difference also seen with DGLAP
- Geometrical scaling for charm different? Does exist at all?
  - ➔ charm events have something interesting to tell!!!