

Plots for Sections 1 and 2

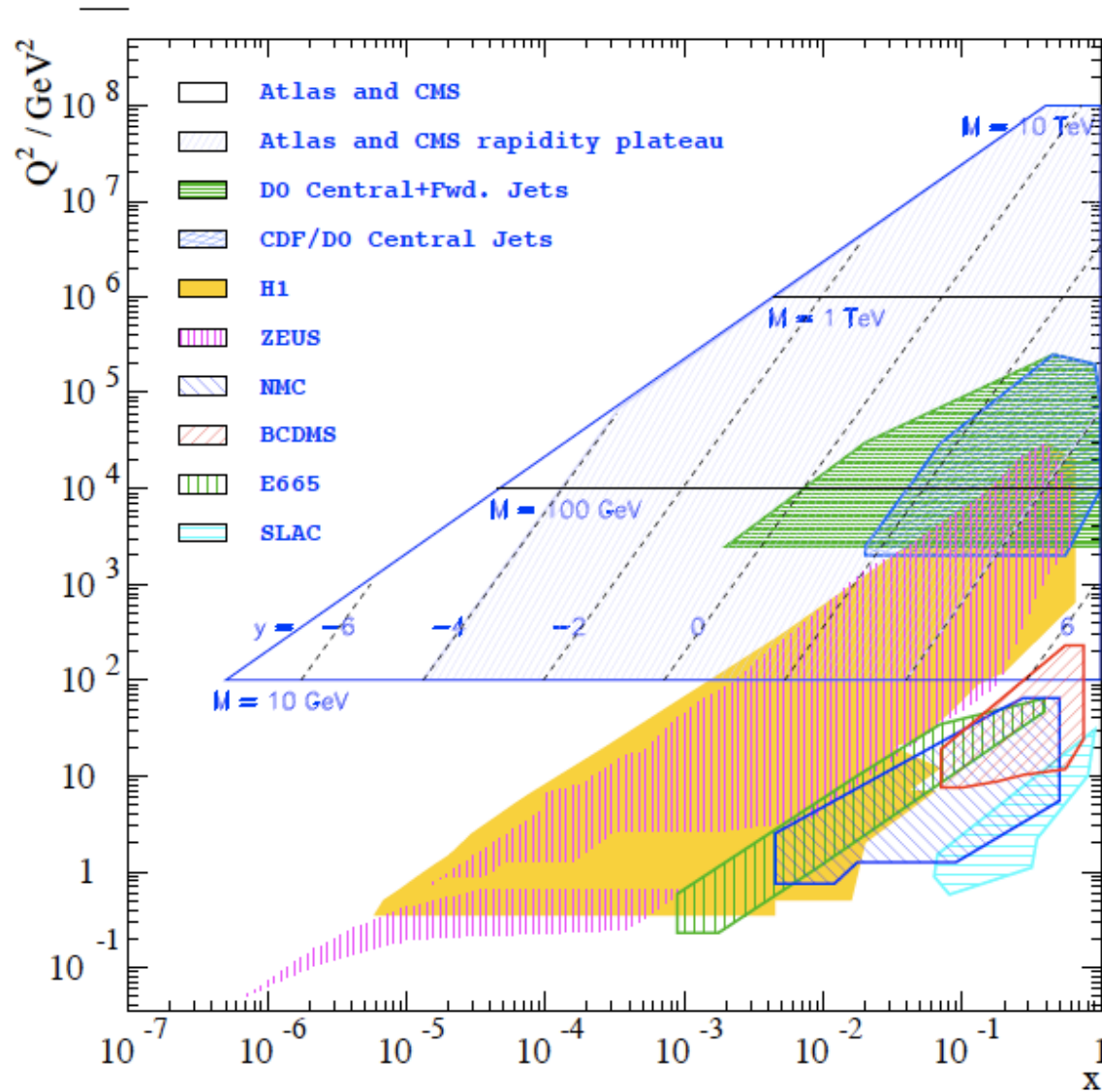
M.Klein, ELAN-SM 18.11.2009 CERN

1. Introduction
2. Cross Sections and Their Ratios
 - 2.1. Formalism
 - 2.2. Predictions

Discussions with and input from Jan, Mandy, Uta, Voica

1. Introduction

Kinematic Plane – Fig.1



This plot but with modified plateau < 2.5

Expected Z,W[±] Event Rates – Fig.2

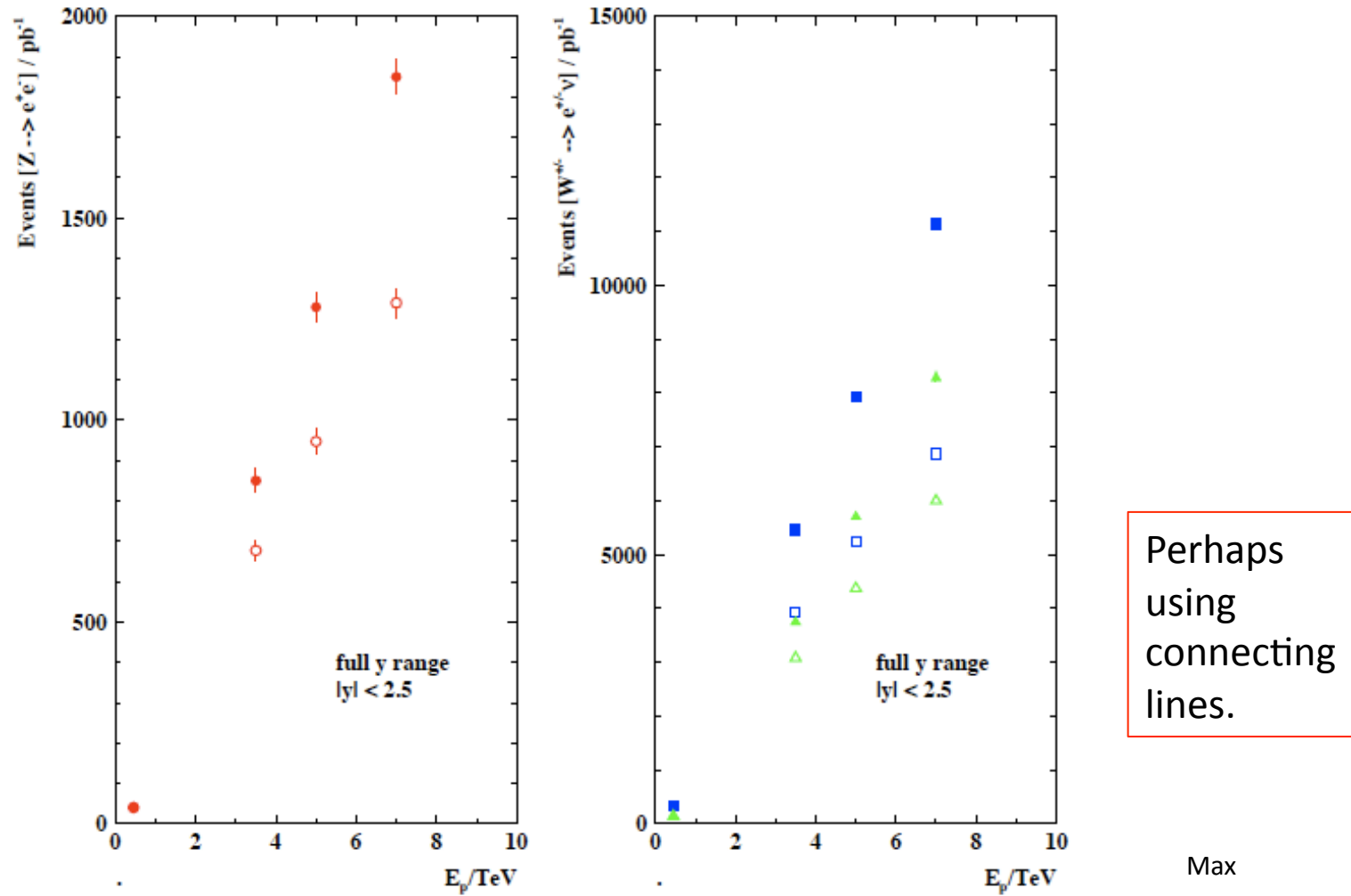


Figure 2: Events per pb⁻¹ of luminosity as a function of the proton beam energy E_p .

2. Cross Sections and Their Ratios

2.1. Formalism

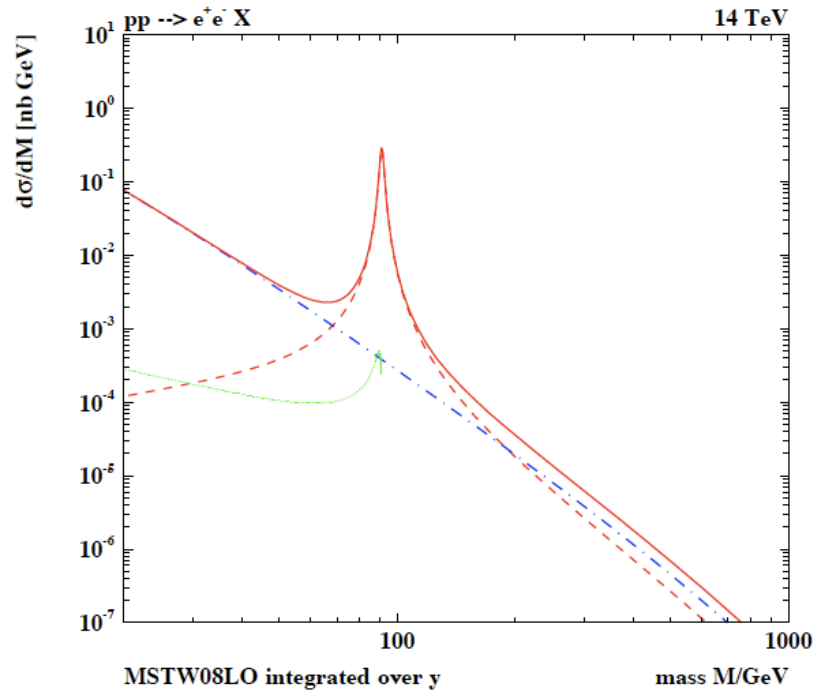
DY cross section formulae

M

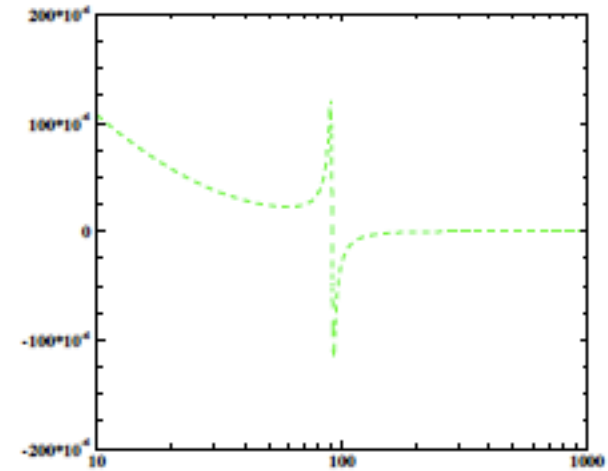
y

p_t dependence

Drell Yan Z Cross Section vs M – Fig.3



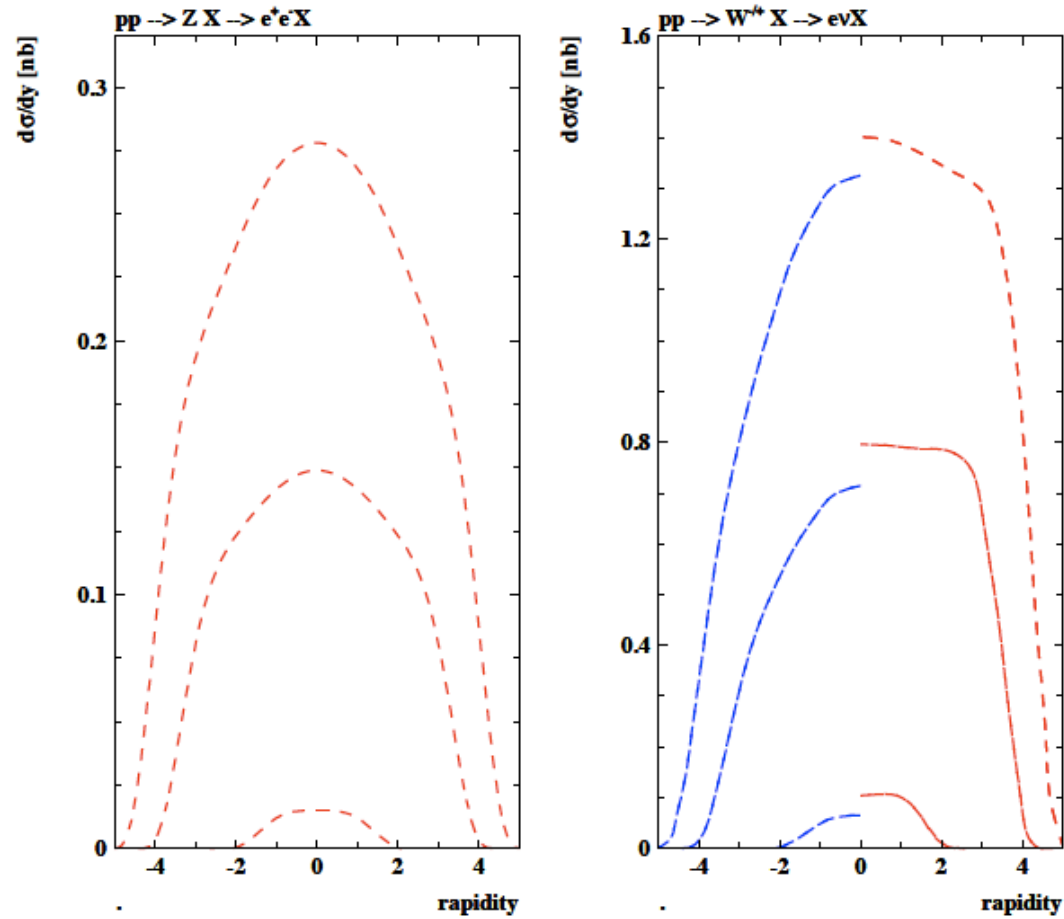
Redo for 10 TeV



Max

Small - To illustrate the DY Cross Section formulae, M_Z cuts, the rate for high M , γZ

Drell Yan Z and W Cross Section vs y – Fig.4



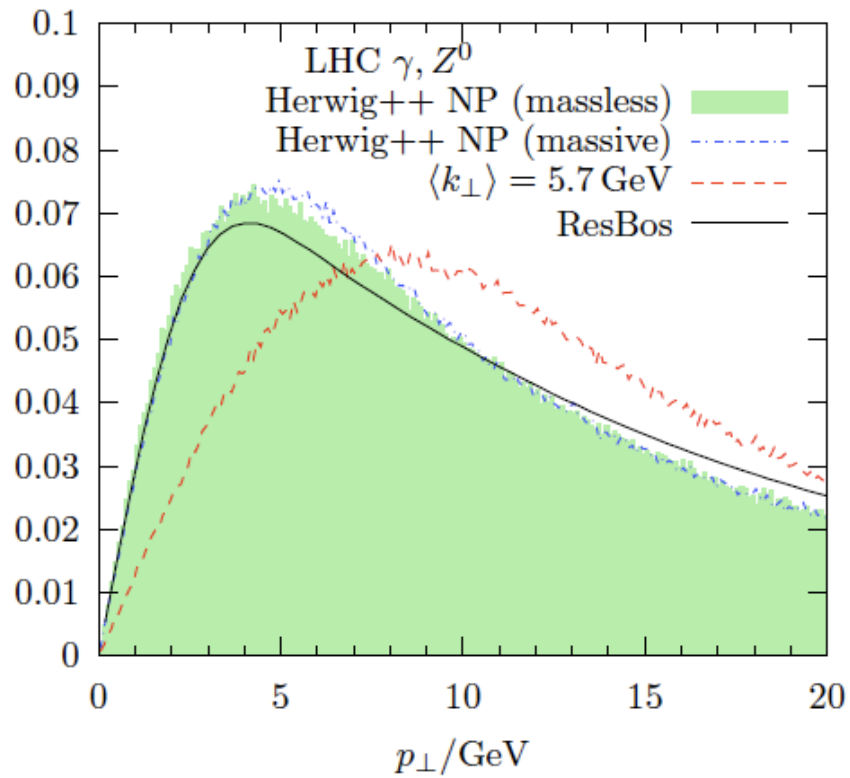
Ok?

Max

Small - To illustrate the DY Cross Section formulae and rapidity range vs energy

Interest in p_t measurement – Fig.5

arXiv:0905.3455v1 [hep-ph]



Desirable to motivate
interest in p_t measurement

Uta
will provide some text

Fig. 3. Vector boson p_{\perp} distribution at the LHC. Our model is compared to the extrapolation of Gaussian intrinsic k_{\perp} to LHC energies and the result from ResBos.

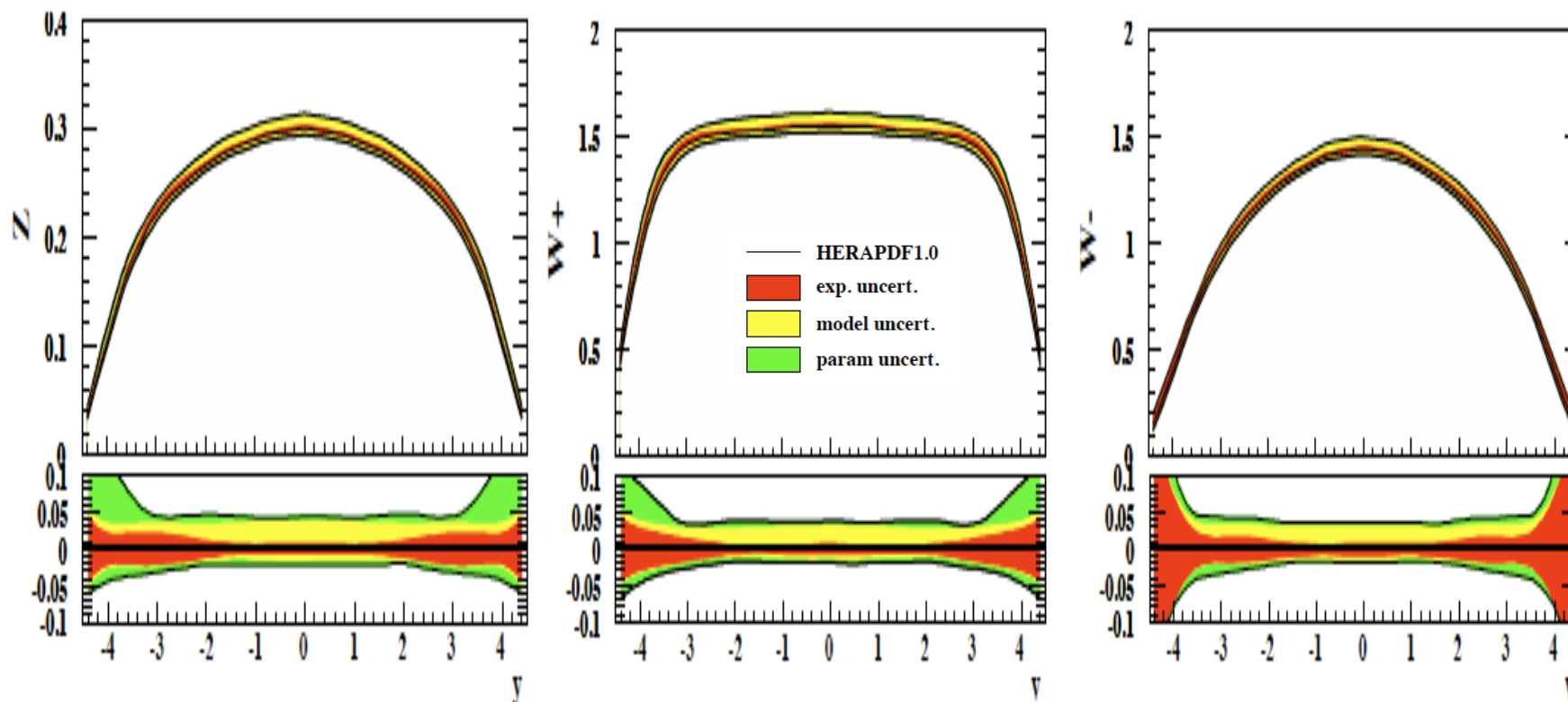
2. Cross Sections and Their Ratios

2.2. Predictions

Standard pdf expectations based on HERAPDF1.0, CTEQ and MSTW

Variations of pdfs (strange and ubar-dbar effects)

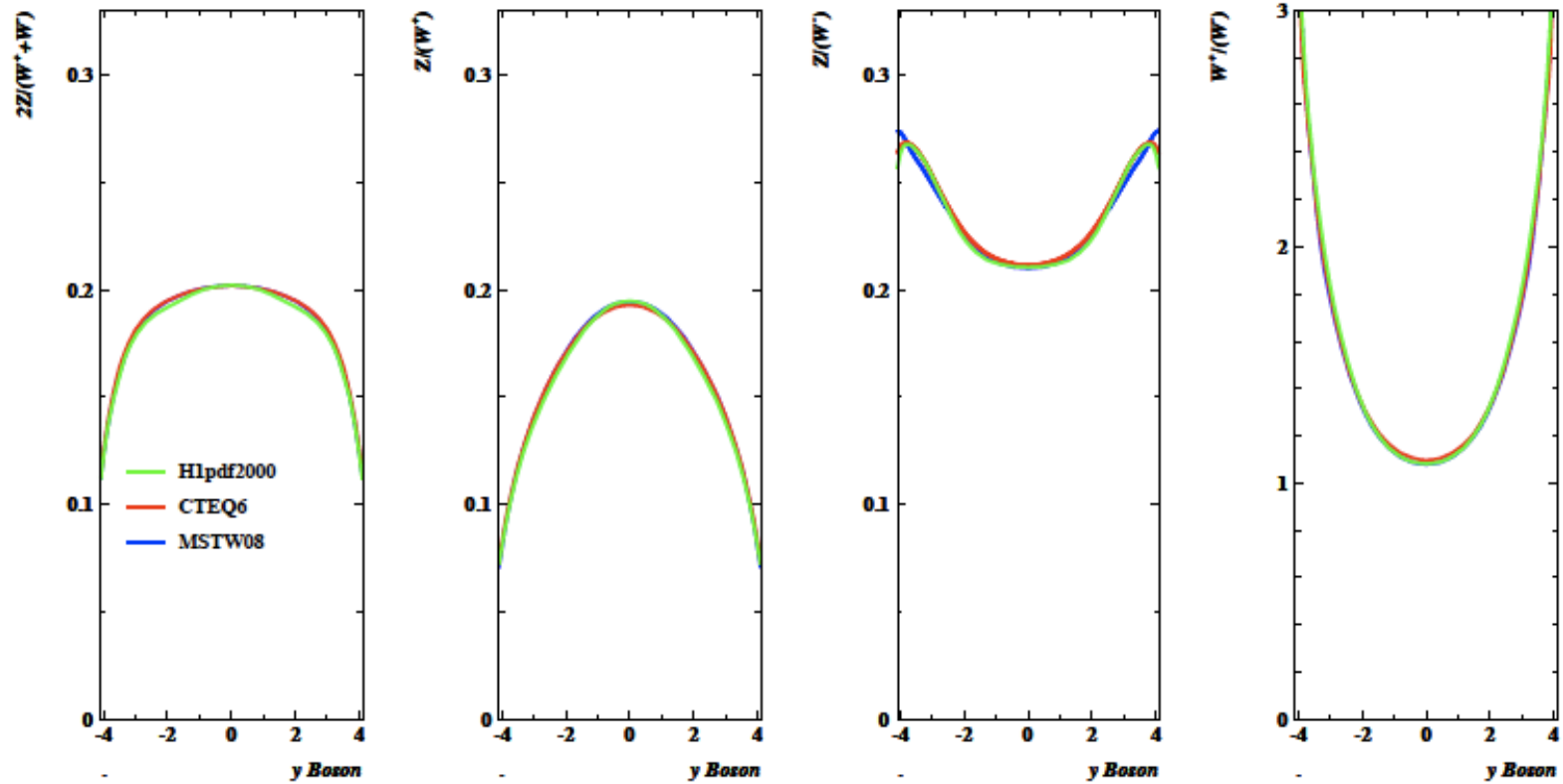
Cross Section Predictions and Uncertainties – Fig.6



Use HERAPDF1.0 to display uncertainties
Overlay MSTW08 and CTEQ6 to show pdf variations
Being done by Mandy for 10 TeV

Mandy

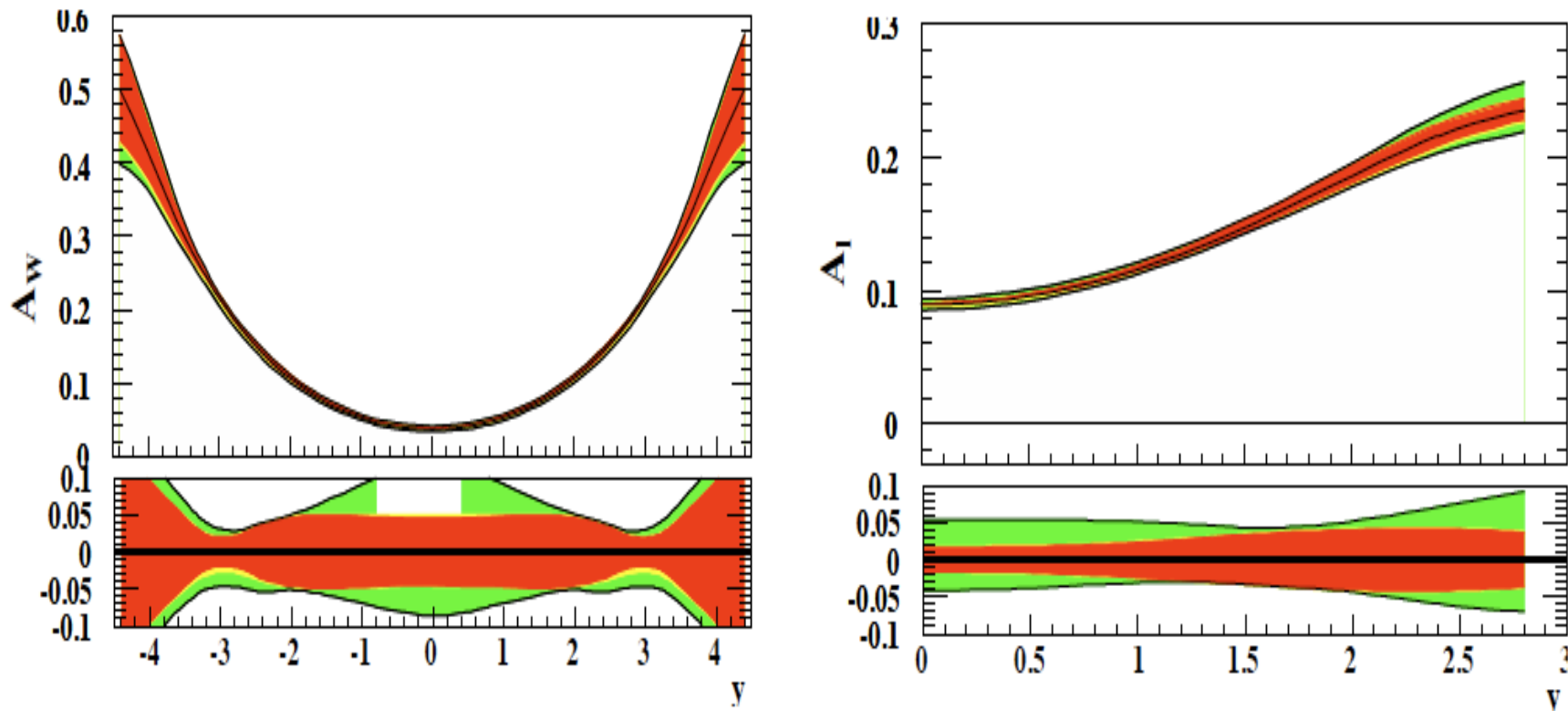
Ratios – Fig.7



To come in NLO - Mandy

Max → Mandy

W^\pm asymmetry and $y_W - \eta_e$ Fig.8



To be made comparable, being redone for 10 TeV.

Last part are variations due to pdf's

Recall: we studied effects from strange and u/d low x differences

[main result was:

50% different strange \rightarrow 5-10% different cross sections, depending on how F_2 is fixed.
and large effects from u/d differences too. Presented (J/U/M) at W/Z meeting]

Last ELAN meeting: agreed to study the effect of evolution:

How much of the differences at Q_0^2 reaches the W,Z mass scales?

Studies done by Jan, Voica, Mandy.

Summaries today: Voica: pdf uncertainties and variations

Mandy: effects on W,Z cross sections

\rightarrow will be summarised in 2.2 (or 2.3) for the note.

Summary

1. Introduction - READY
2. Cross Sections and Their Ratios
 - 2.1. Formalism - READY
 - 2.2. Predictions – pdf part almost ready
variations to be concluded