

# Measurement of Jet Inclusive Cross Section using the KT Algorithm in CDF RUN2

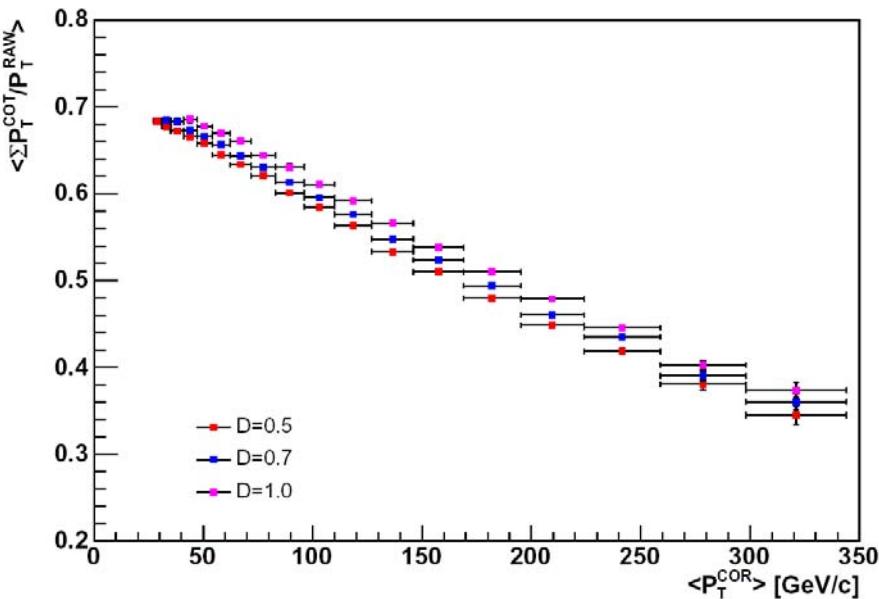
*Update of pre-blessing talk*

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IFAE

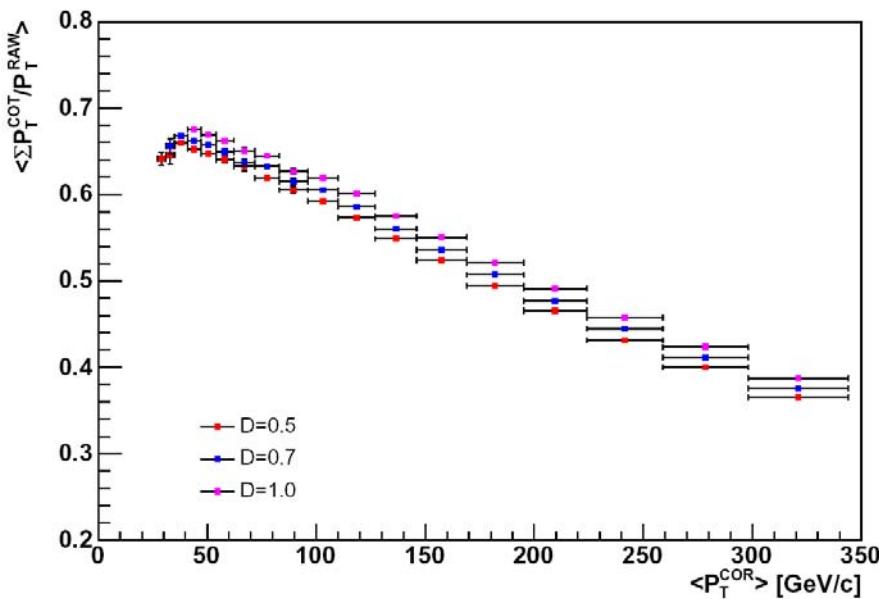
# Introduction

- Context
  - $0.1 < |Y| < 0.7$
  - $D = 0.5, 0.7$  and  $1.0$
- Pre-blessing Update
  - Review energy scale systematic: from 3 to 5 %
    - $(COT/CAL)_{DATA} / (COT/CAL)_{MC}$  within  $\pm 5\%$
  - Add systematic coming from resolution uncertainty
  - Results
    - Plots limited to  $P_T > 72 \text{ GeV}/c$
    - Simplified systematic picture on plots: just global one shown
    - NLO comparison
      - Still working on normalization scale and PDF uncertainties

DATA (NVertex≤1)



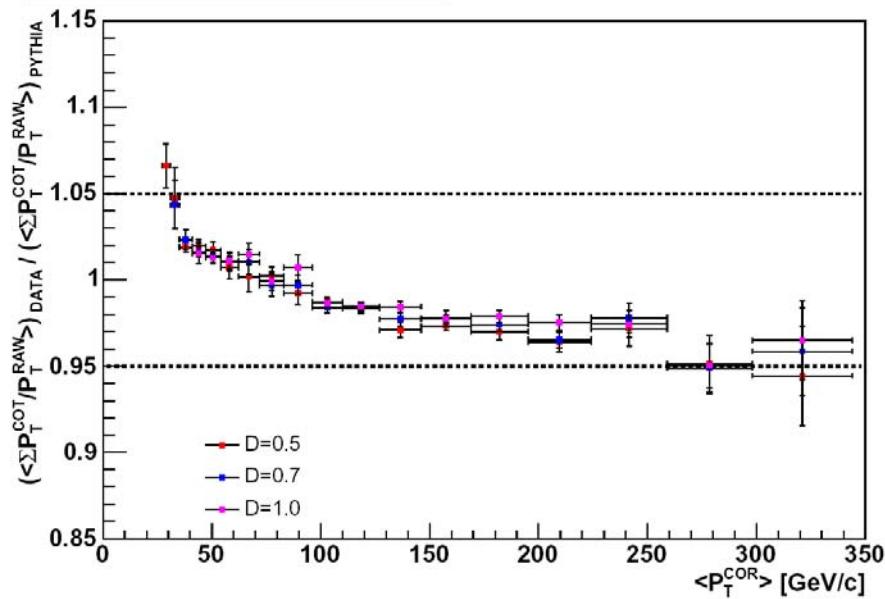
PYTHIA



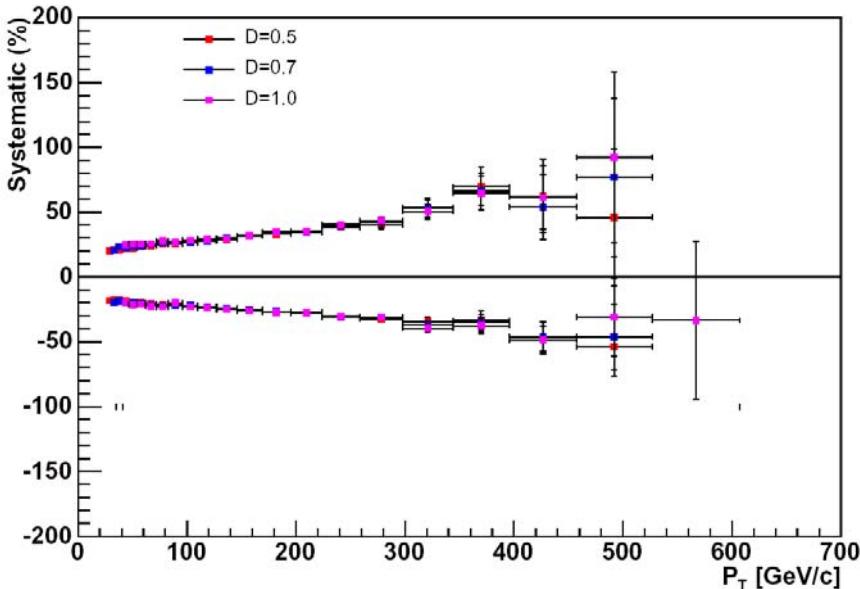
Scalar sum of  $P_T$  of COT tracks associated with the jet

- $P_T > 0.5 \text{ GeV}/c$
- $P_T < 500 \text{ GeV}/c$
- $|\eta| < 1.5$
- $\Delta V_Z = |V_Z(\text{Jet}) - V_Z(\text{Track})| < 2 \text{ cm}$
- $\Delta R = \sqrt{[(\phi_J - \phi_T)^2 + (Y_J - \eta_T)^2]} < D$

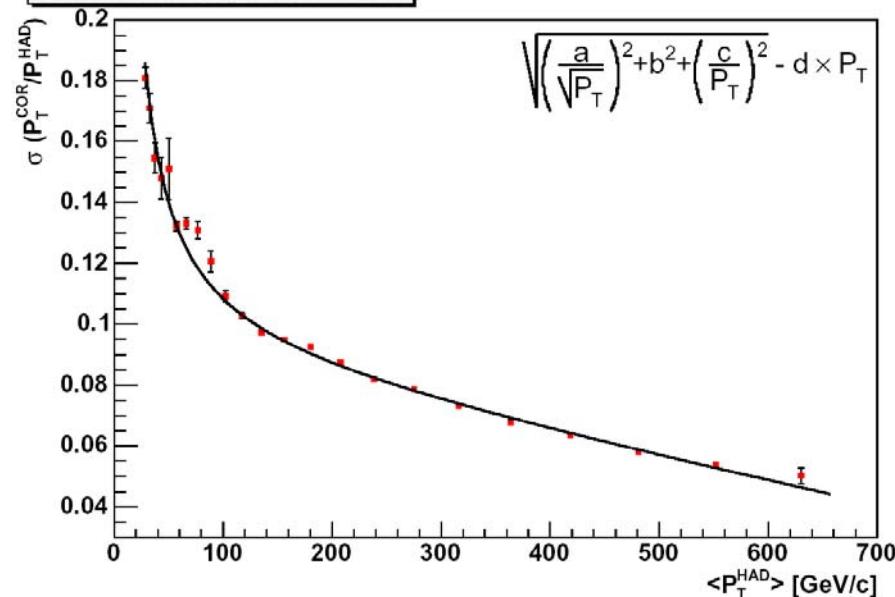
DATA (NVertex≤1) / PYTHIA



Jet Energy Scale changed of +/- 3% → 5%



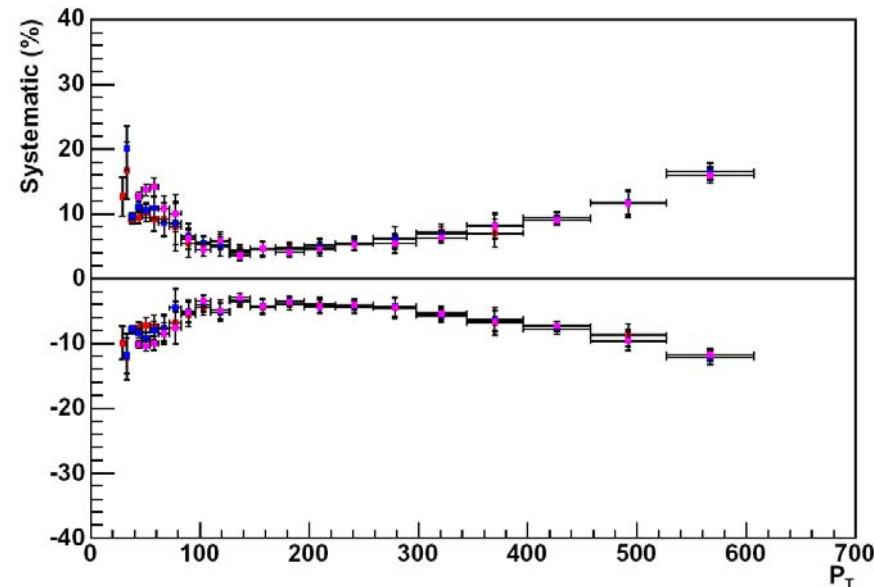
D=0.5: Resolution vs  $P_T^{\text{HAD}}$



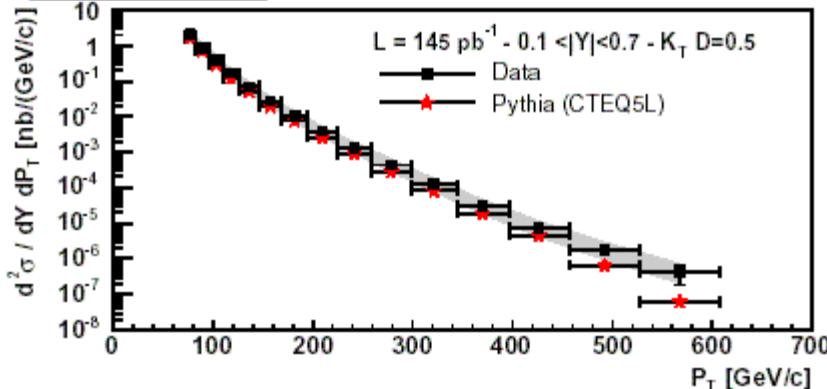
20% uncertainty on resolution

- Use Pythia
  - Get resolution function:  $\text{Res}(P_T)$
  - Smear  $P_T^{\text{Had}}$  distribution with Gauss [  $\mu=0$  ,  $\sigma=\text{Res}(P_T) \times \alpha$  ]  $\Rightarrow P_T^{\text{Had}} S_\alpha$
  - Systematic is (idem for 0.8)
- $$(P_{\text{THad}} / P_{\text{THad}} S_{1.2}) / (P_{\text{THad}} / P_{\text{THad}} S_{1.0}) = P_{\text{THad}} S_{1.0} / P_{\text{THad}} S_{1.2}$$

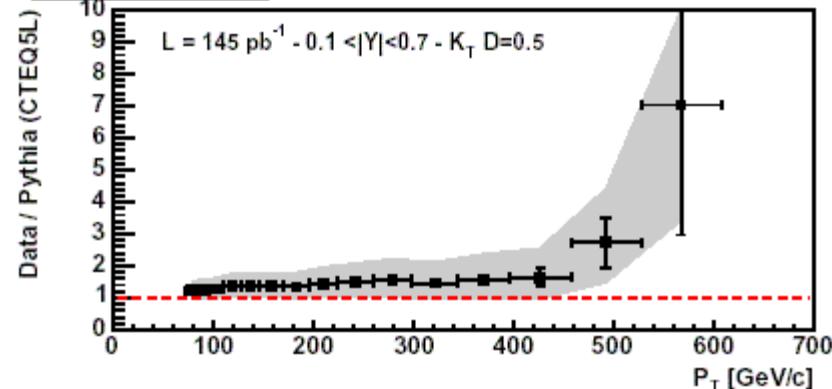
20% uncertainty on resolution



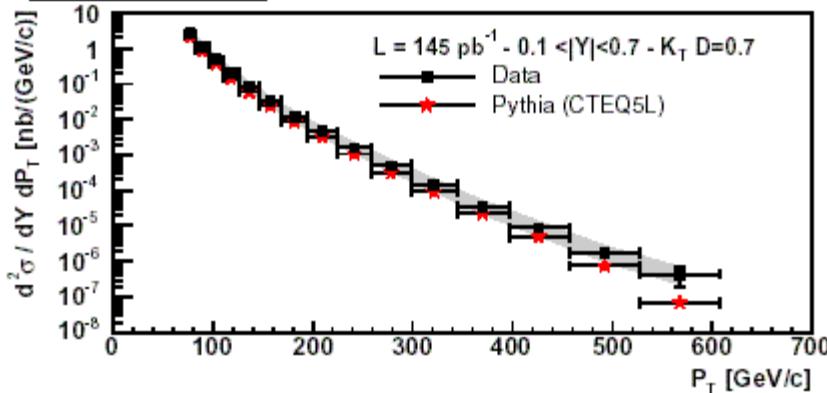
CDF Run II Preliminary



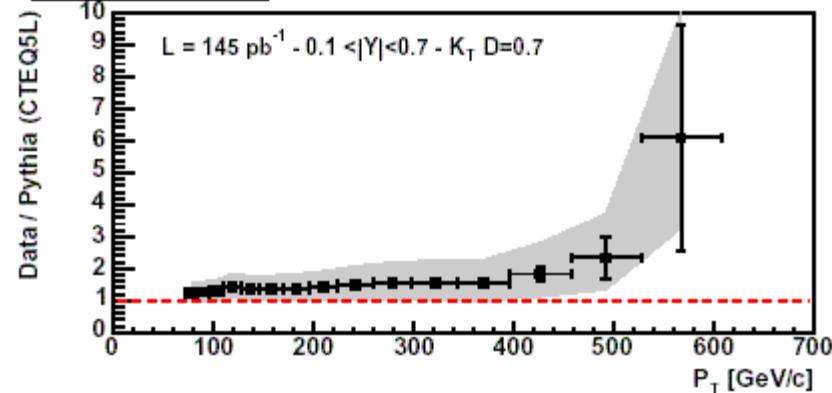
CDF Run II Preliminary



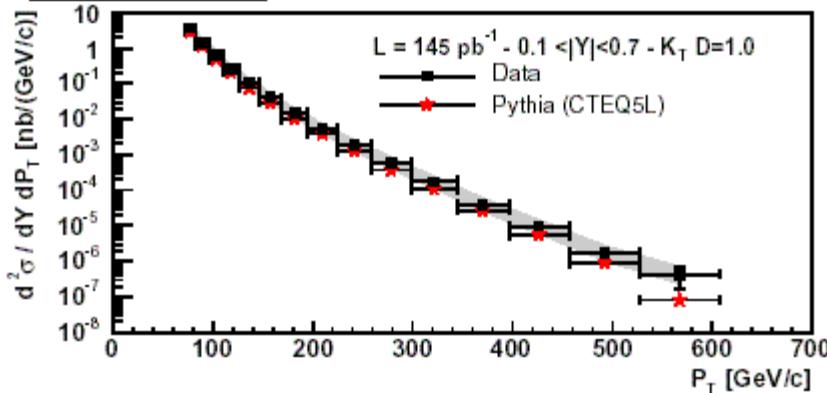
CDF Run II Preliminary



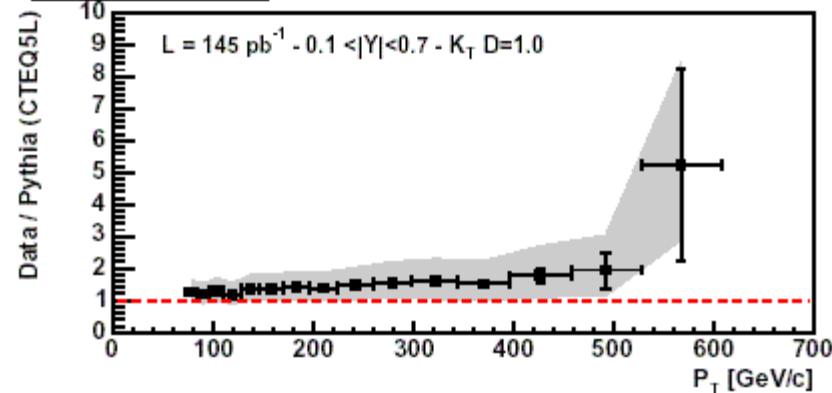
CDF Run II Preliminary



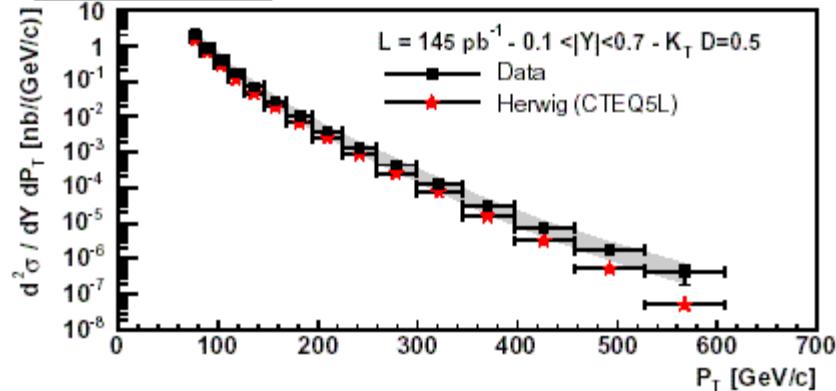
CDF Run II Preliminary



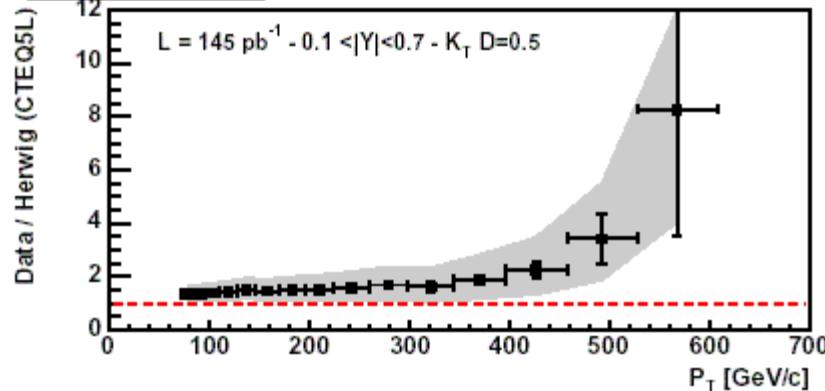
CDF Run II Preliminary



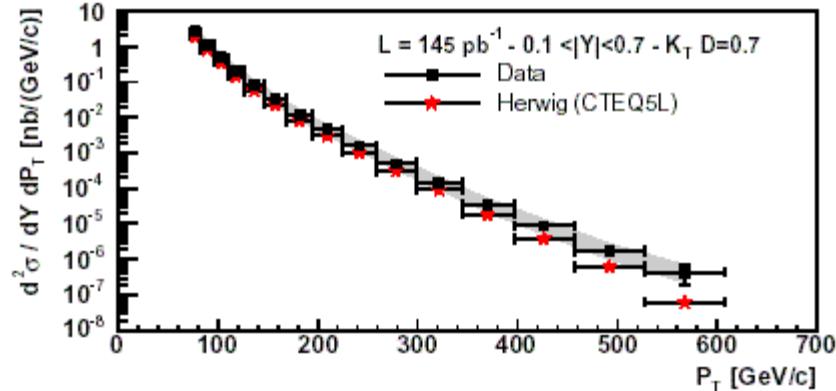
CDF Run II Preliminary



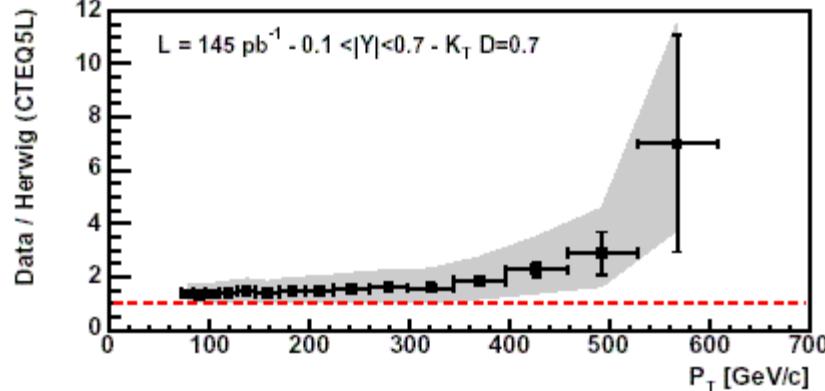
CDF Run II Preliminary



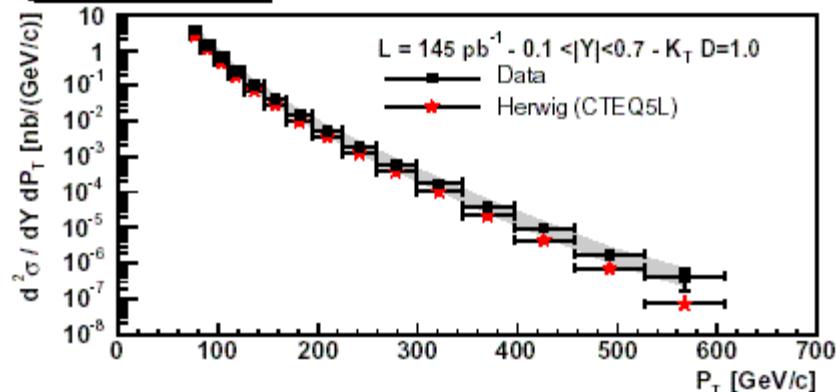
CDF Run II Preliminary



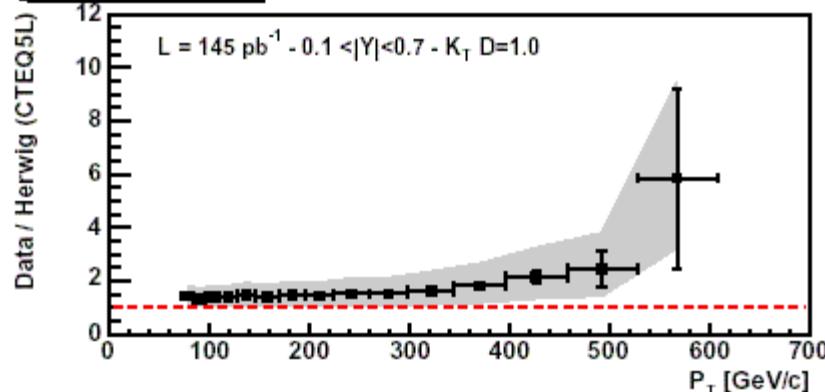
CDF Run II Preliminary



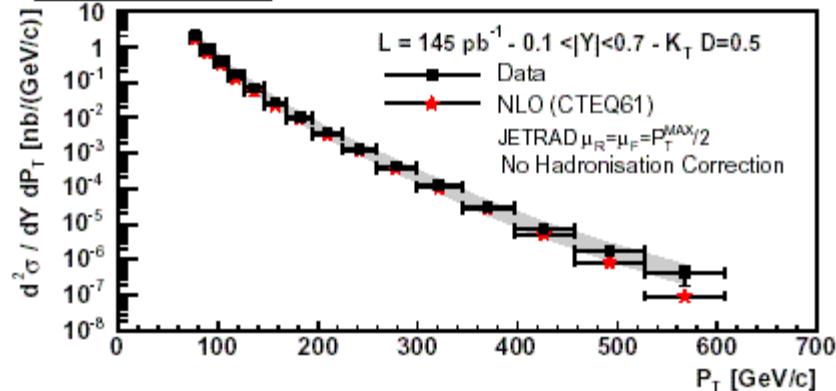
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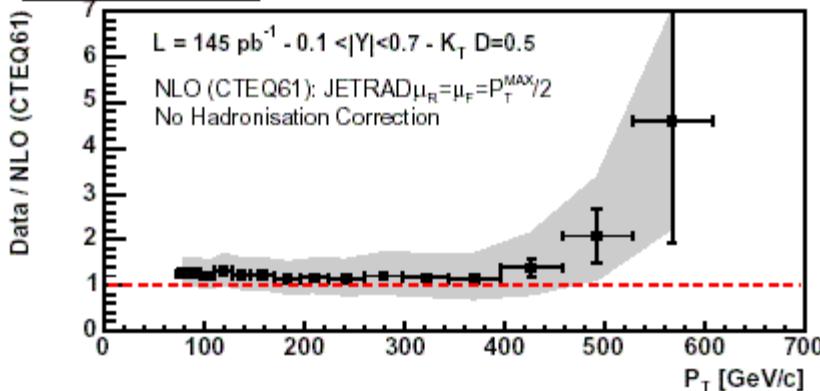
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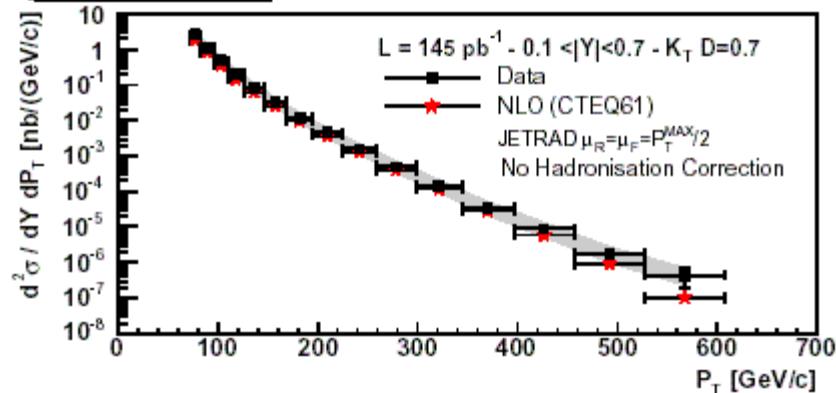
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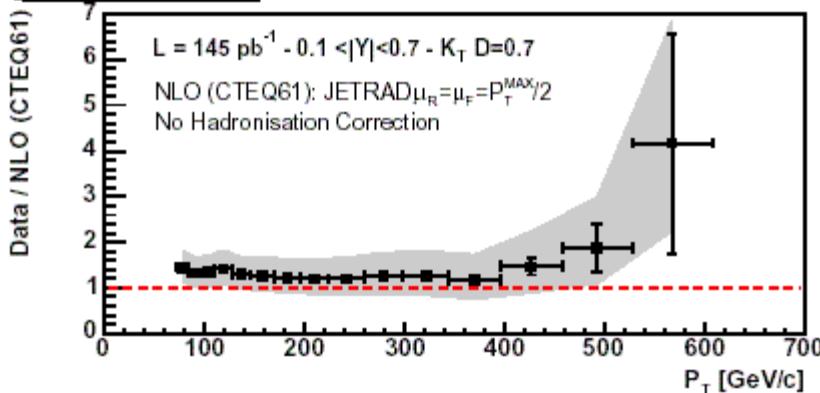
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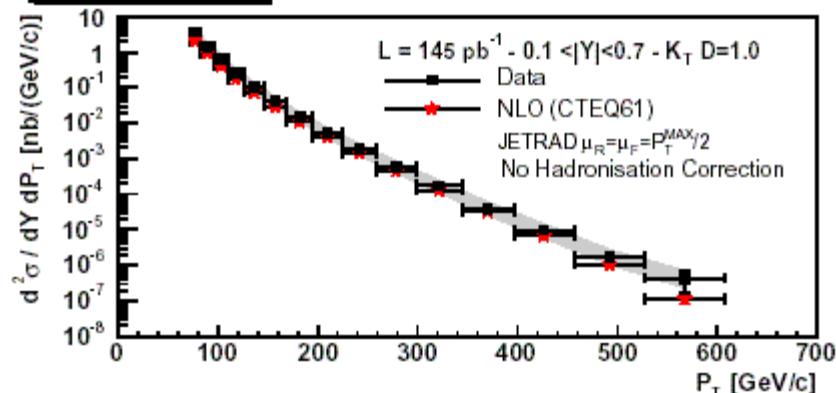
CDF Run II Preliminary



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