Some studies of systematics of top quark inclusive pT and eta distributions

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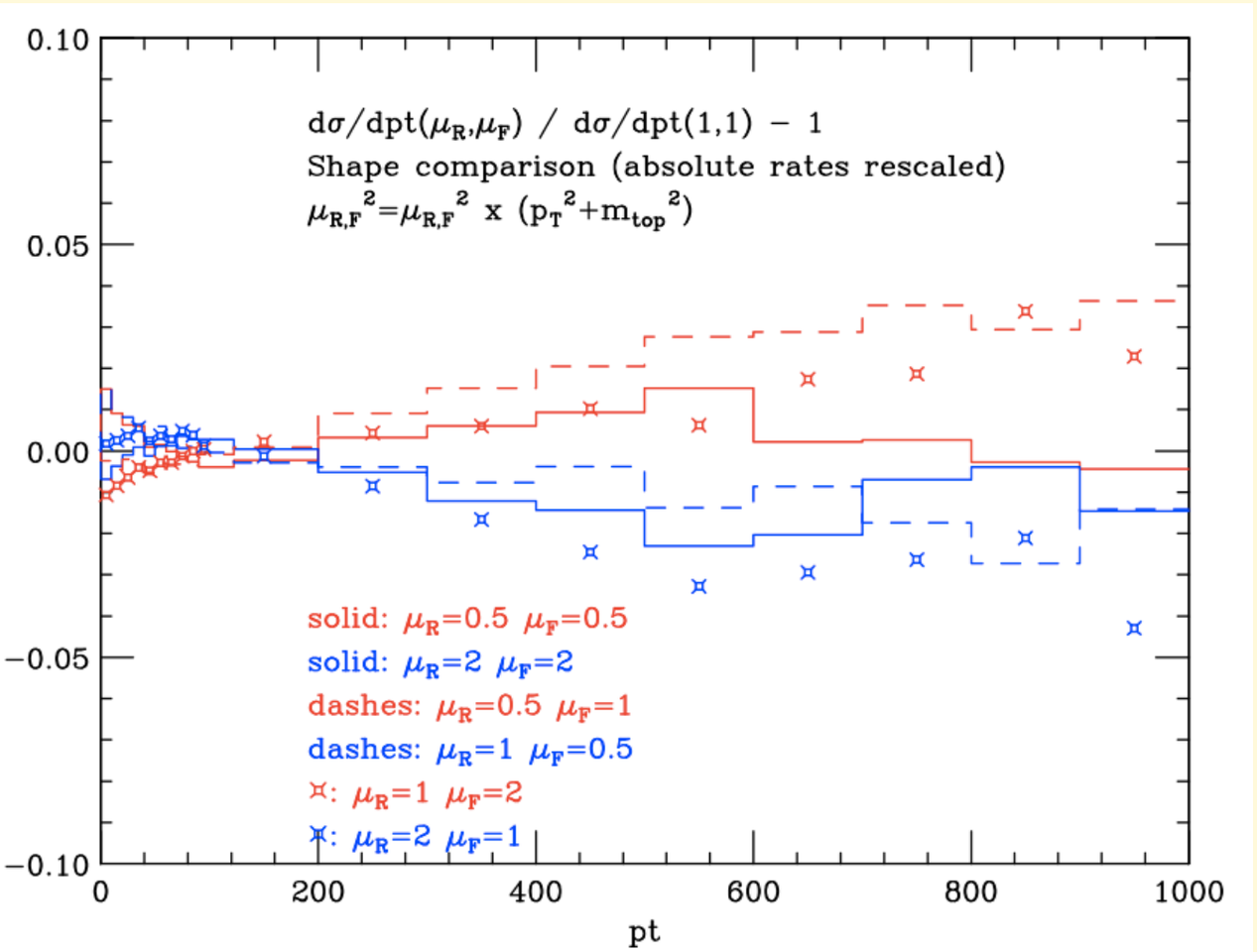
Unless noted otherwise:

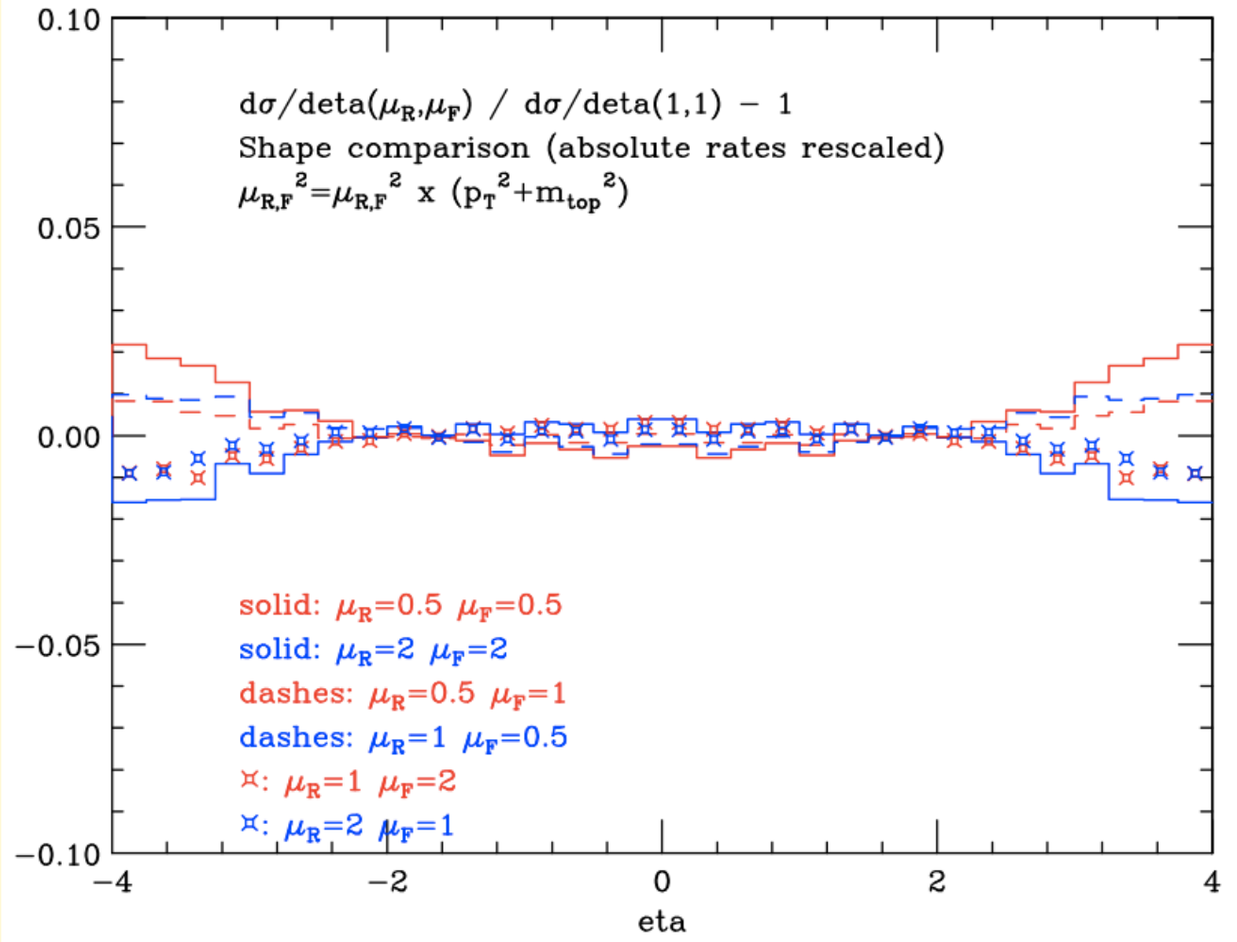
- E_{CM}=8 TeV
- m_{top}=173.3

- NLO curves from MNR code, MNR code:
  - MLM, Nason, Ridolfi, Nucl.Phys. B373 (1992) 295-345
  - $\mu^2_F = \mu^2_R = m_{top}^2 + p_T^2$

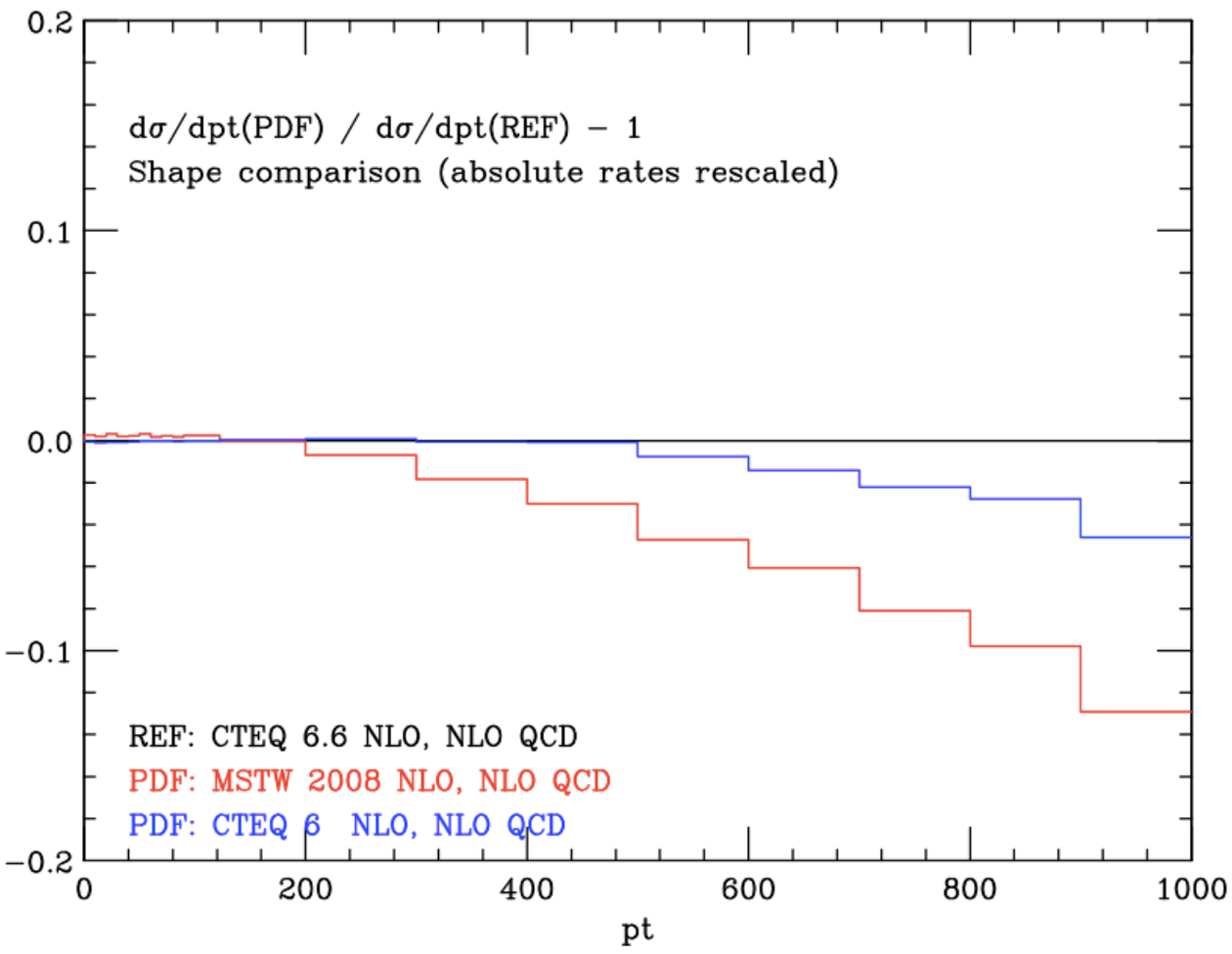
- ALPGEN:
  - v2.14
  - PDF: CTEQ6L1
  - ptjmin=20 GeV, etajmax=2.5, pt(match)=25 GeV
  - default parameters
  - shower: Herwig6521

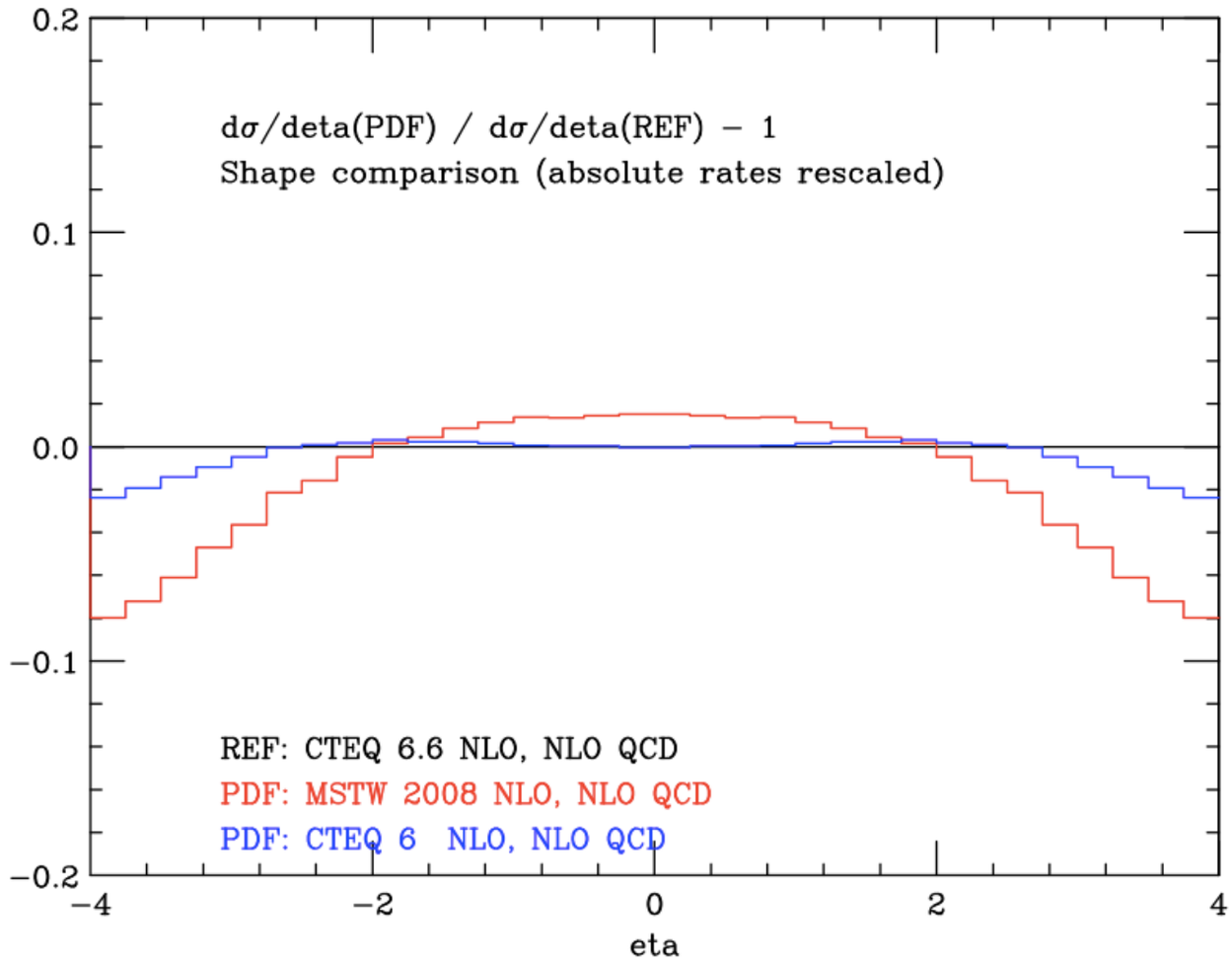
Parton level, exact NLO: scale dependence





Parton level, exact NLO: PDF dependence





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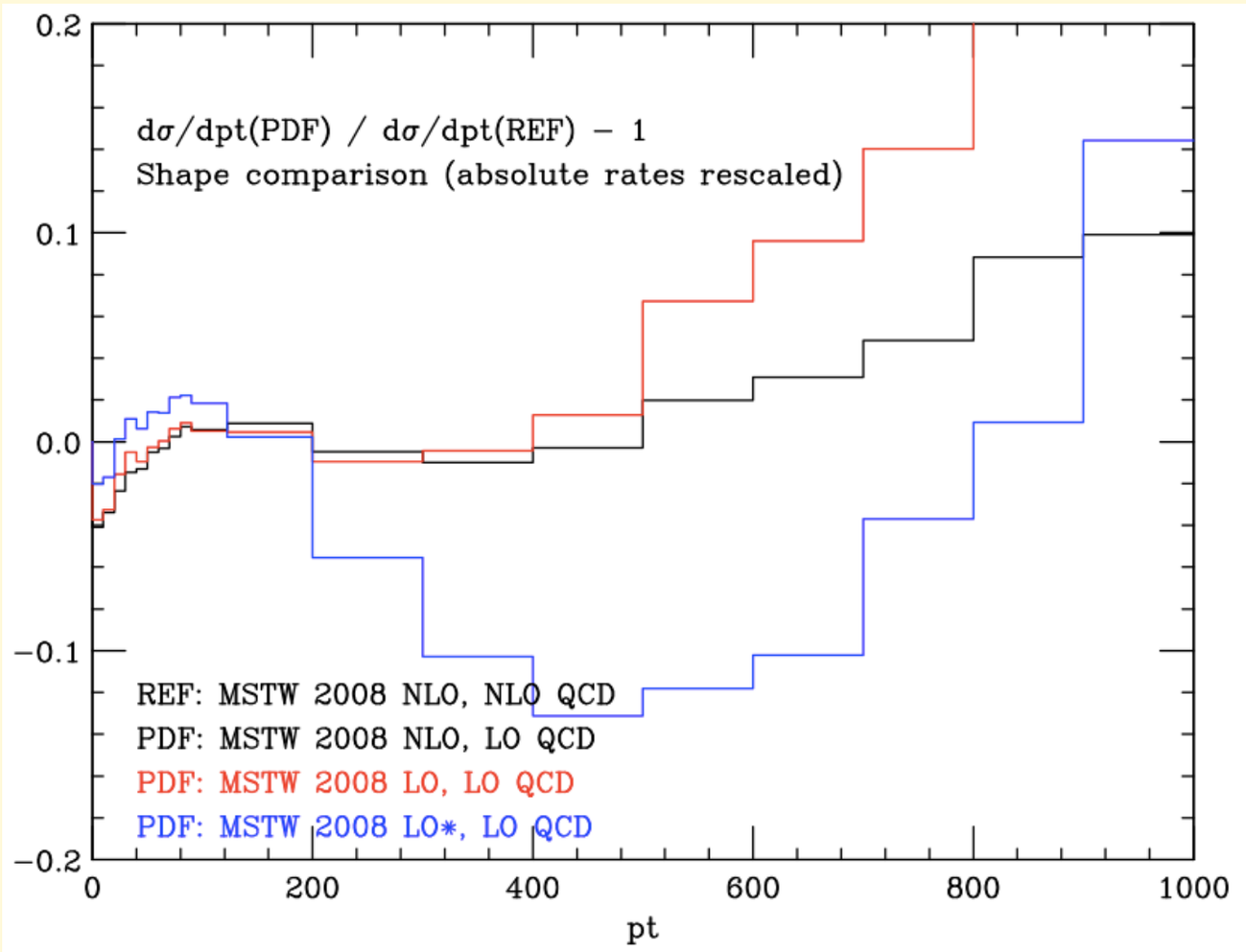

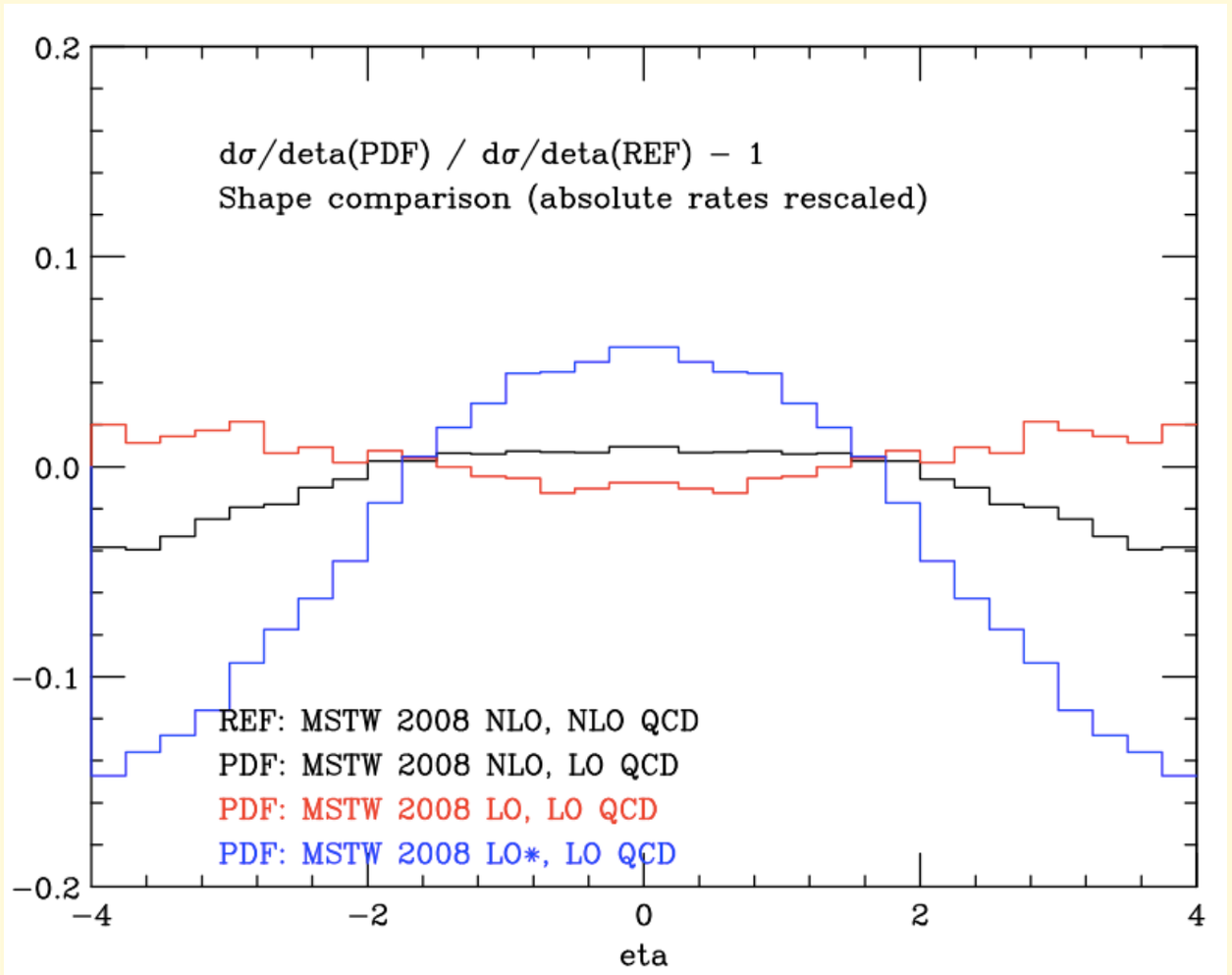

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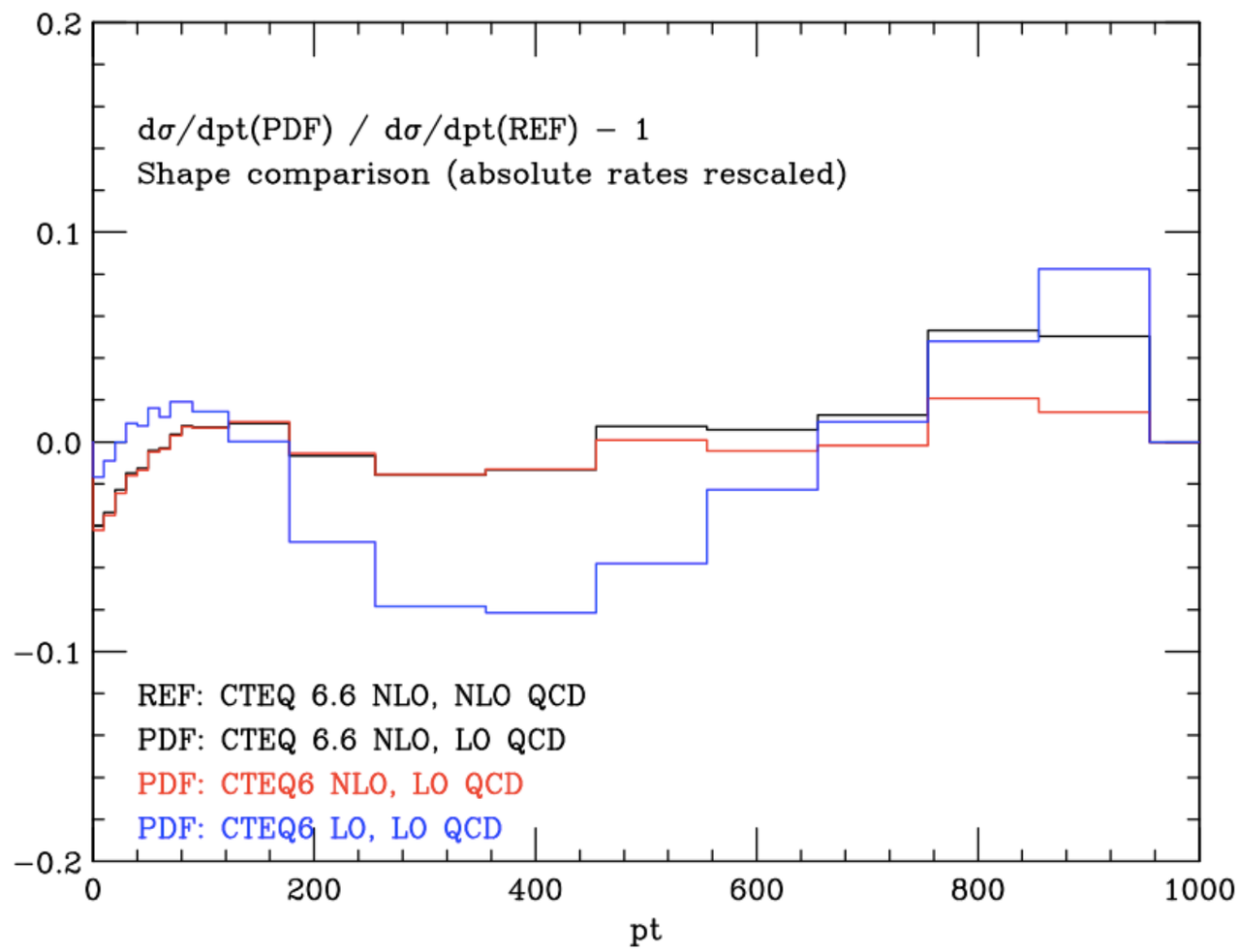
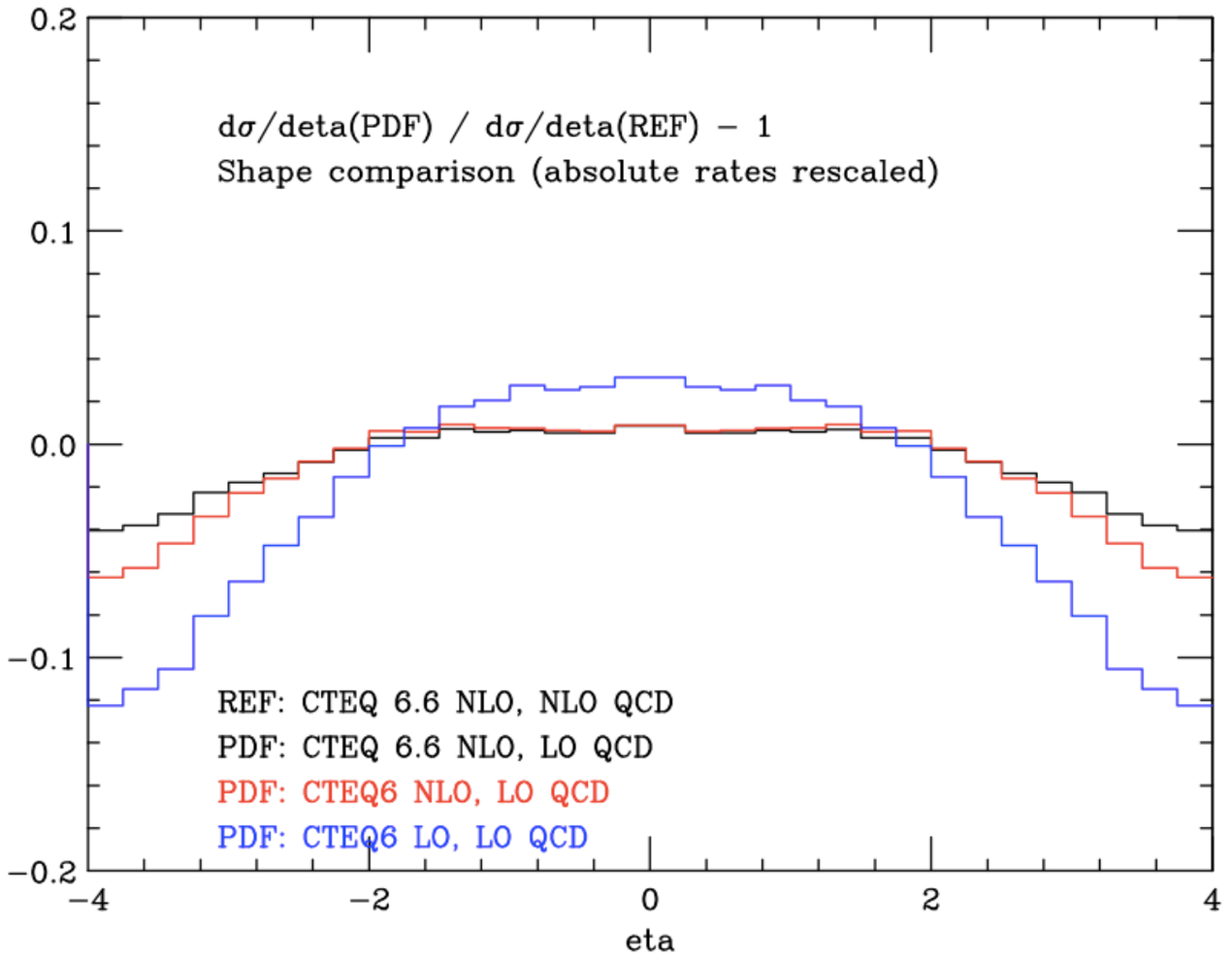
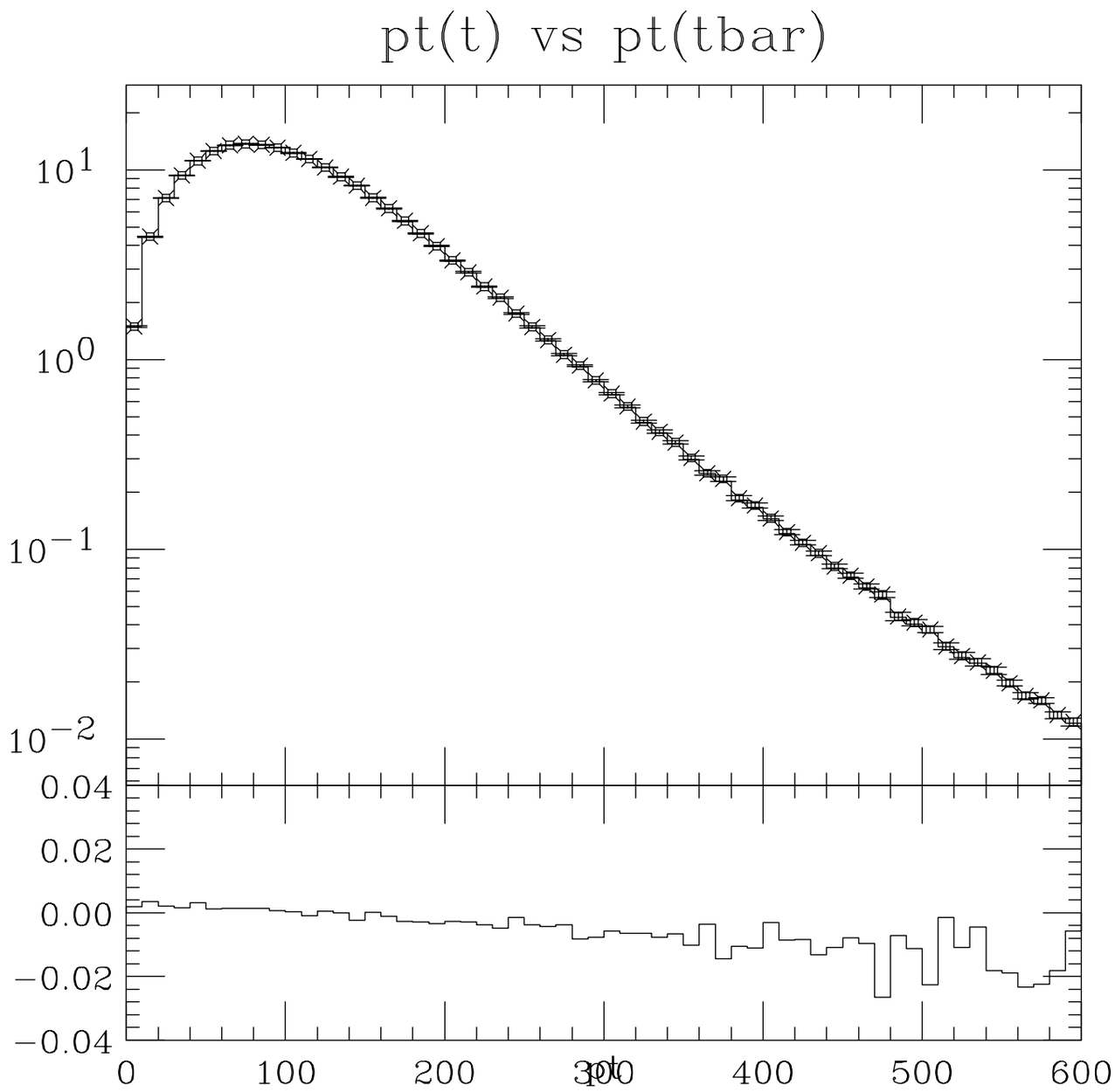


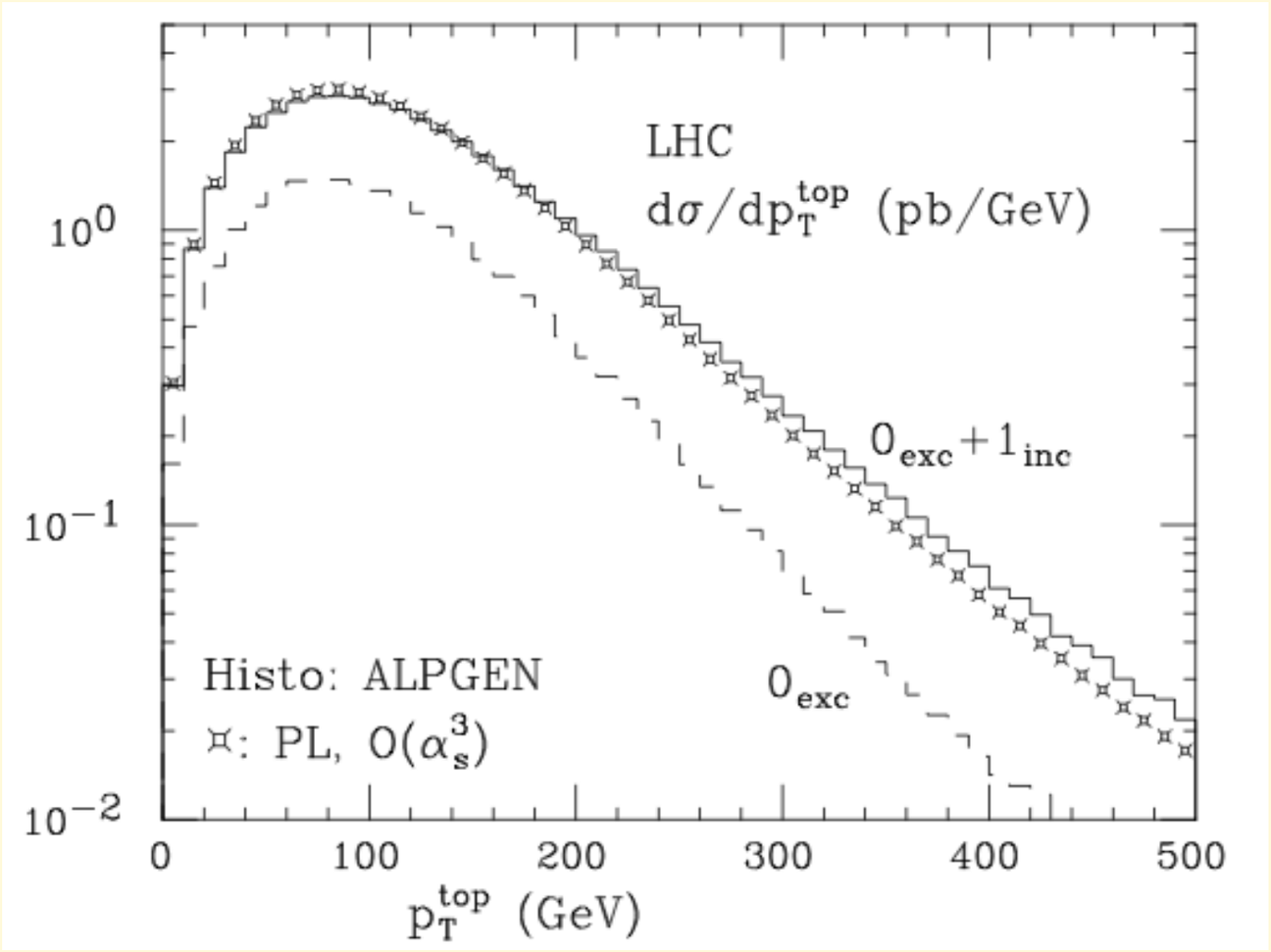


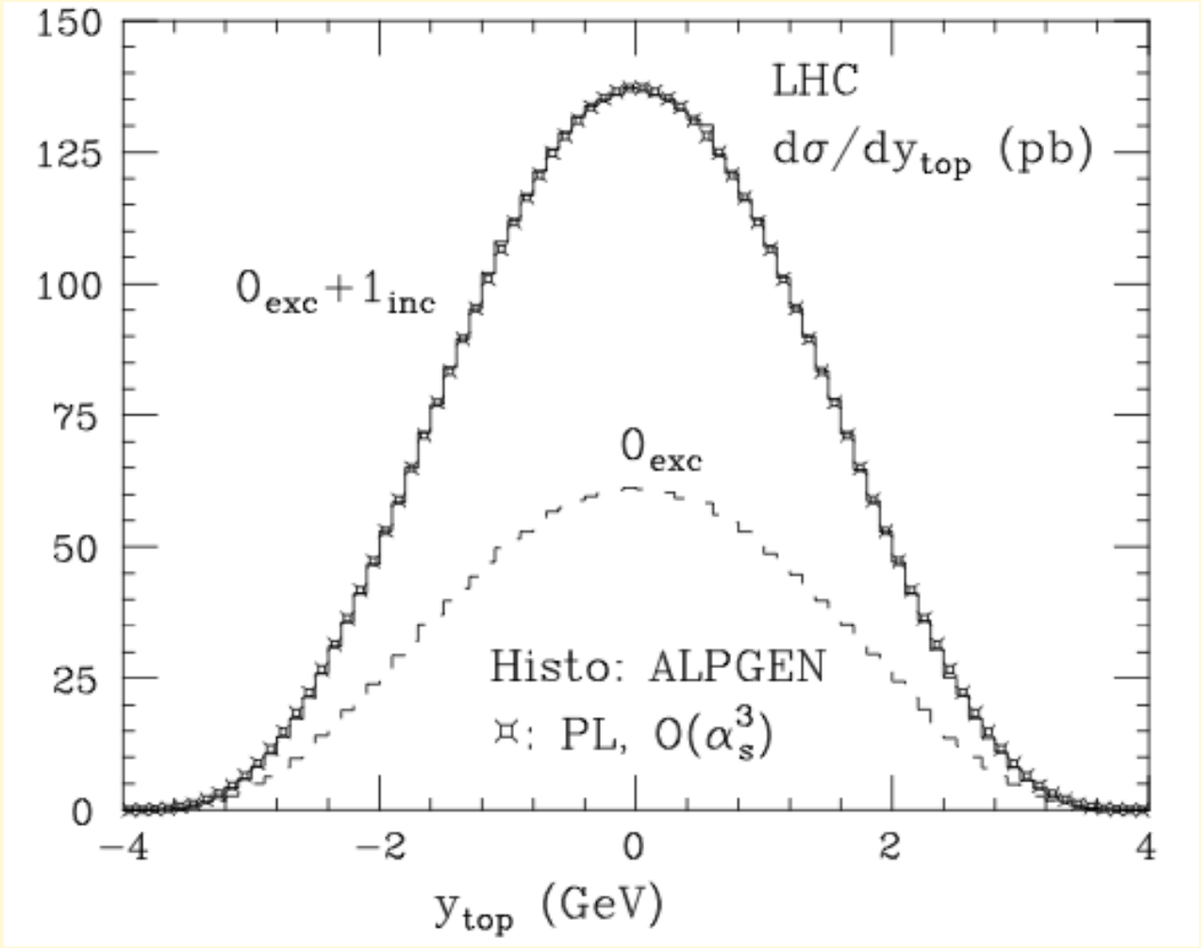
pt(top) vs pt(tbar) at PL NLO



ALPGEN vs parton-level NLO

MLM, Moretti, Piccinini, Treccani, hep-ph/0611129





For both codes:

$$\mu^2 = \frac{1}{2}\left(p_{t,T}^2 + m_{top}^2 + p_{\bar{t},T}^2 + m_{top}^2\right)$$

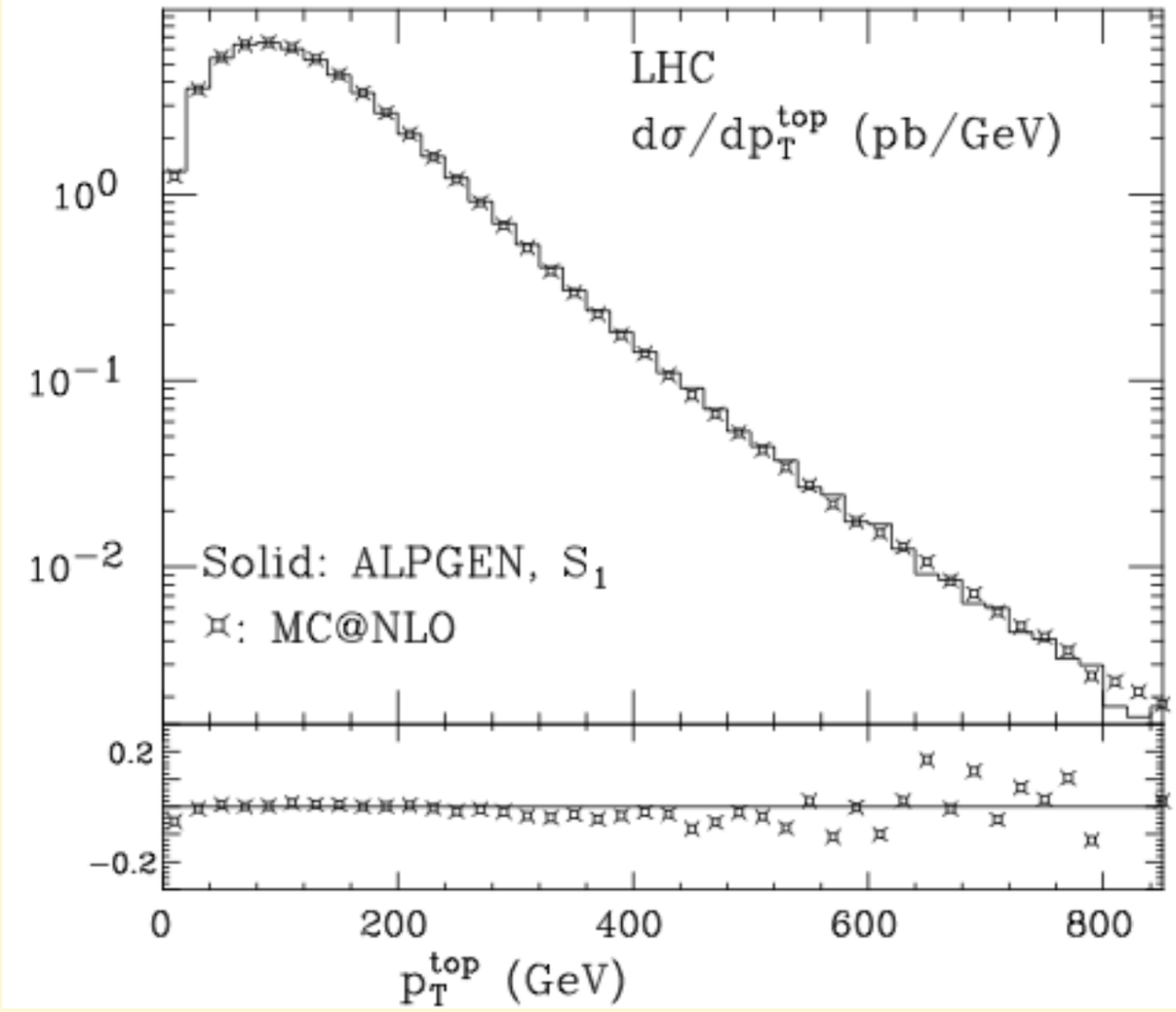
mtop=175 GeV, E_{CM}=14 TeV, PDF: MRST 2001J

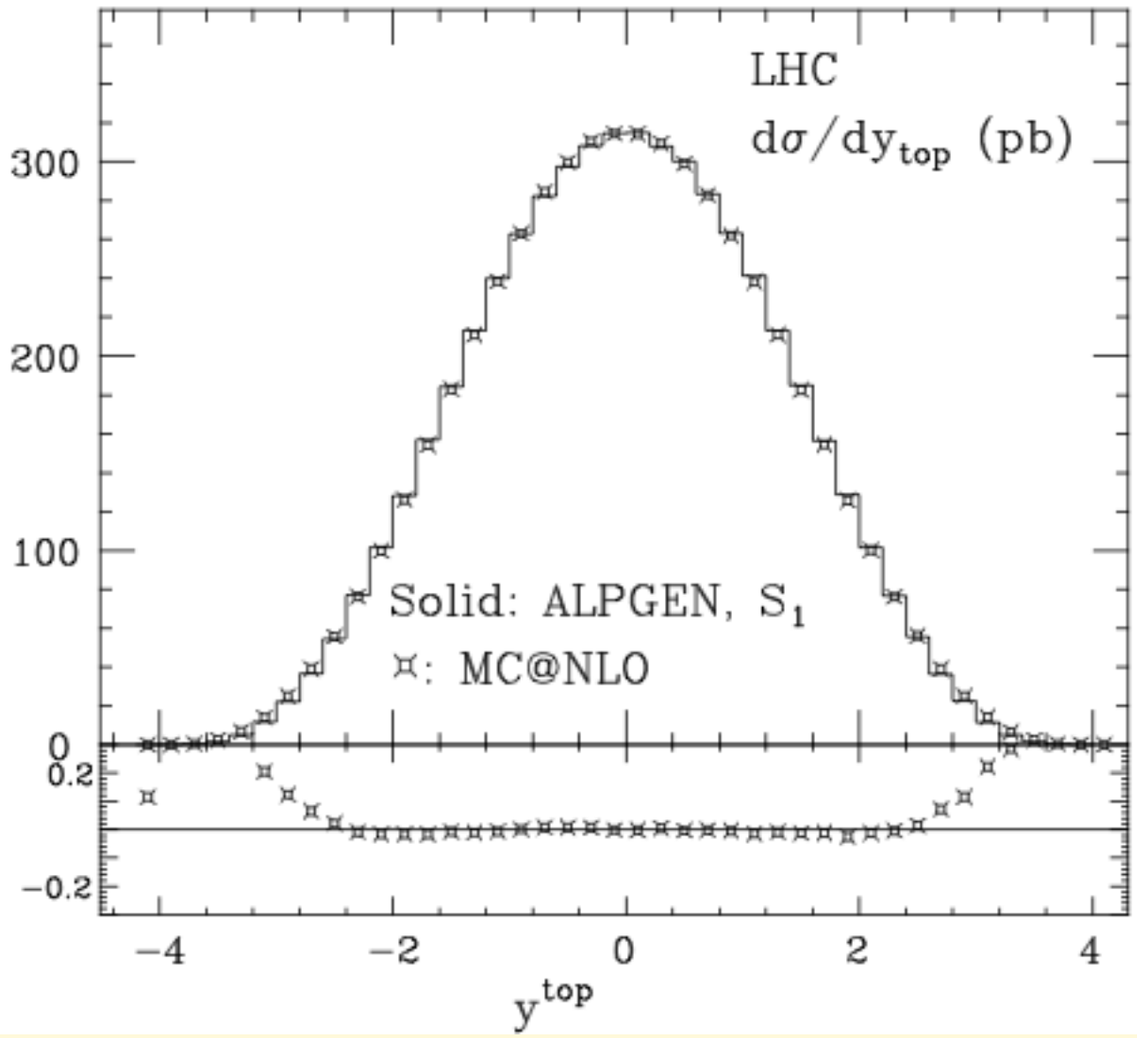
For ALPGEN:

ptj>30 GeV, pT(match)=36 GeV
Kfactor = 1.51

ALPGEN vs MC@NLO

MLM, Moretti, Piccinini, Treccani, hep-ph/0611129





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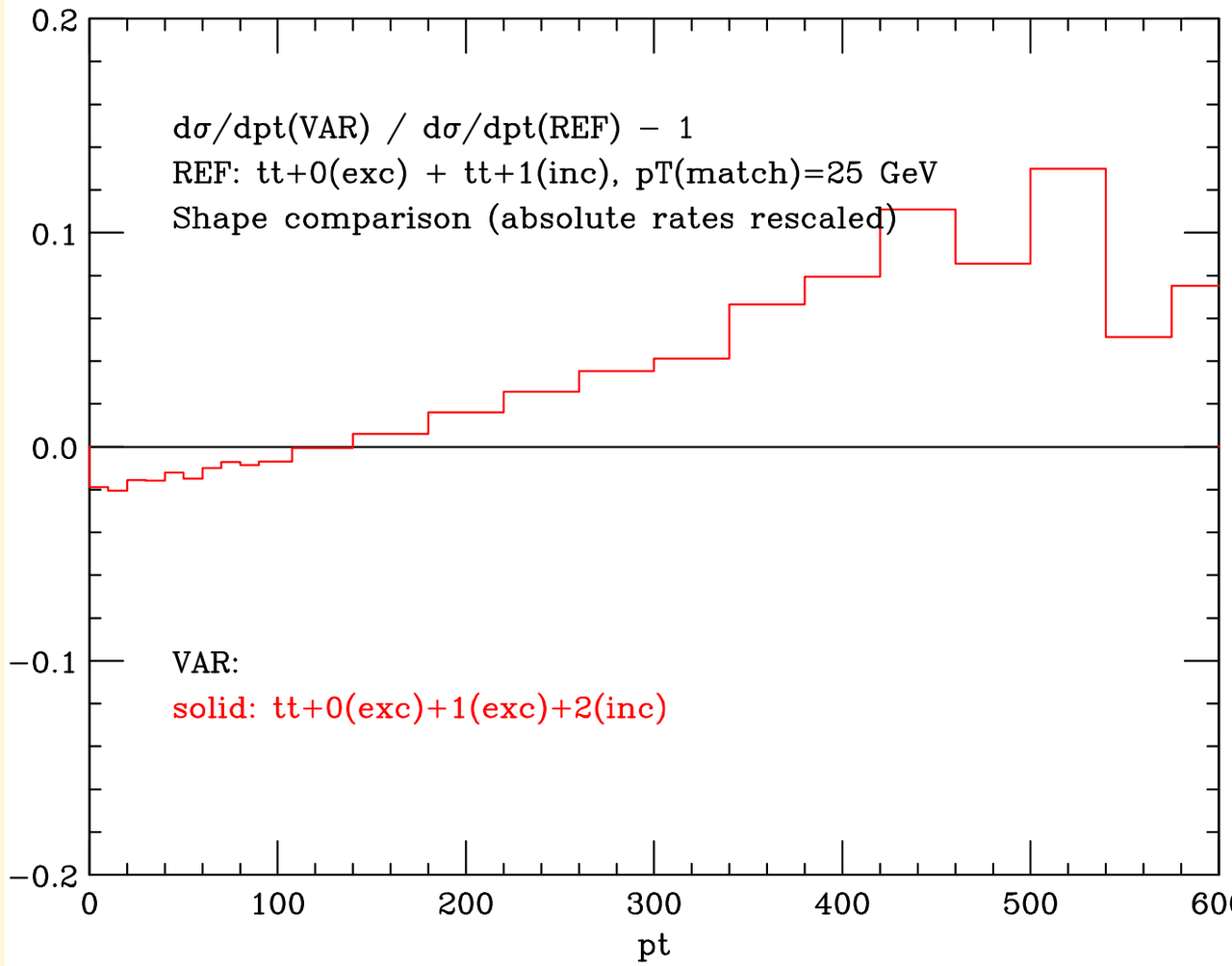
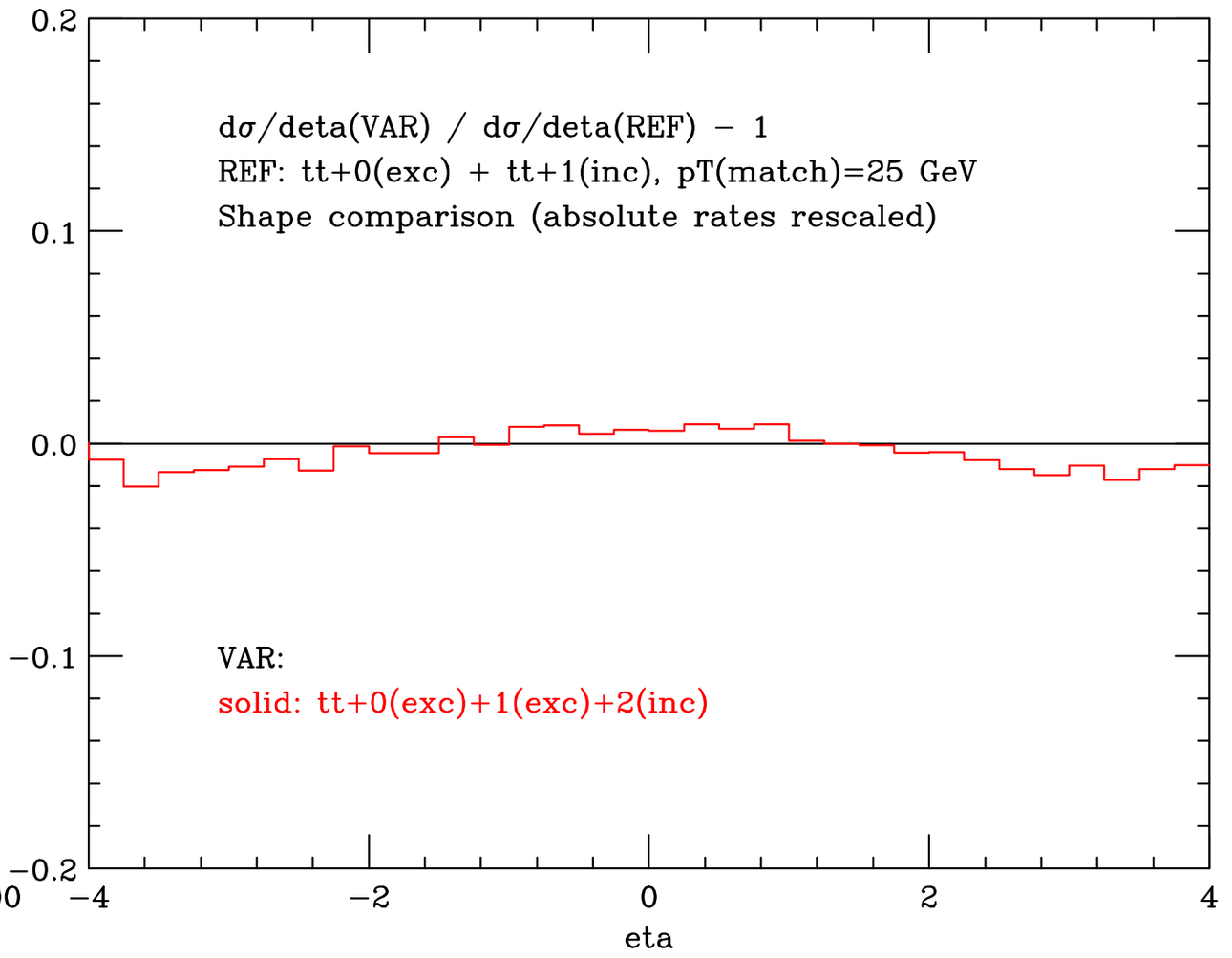
ALPGEN systematics





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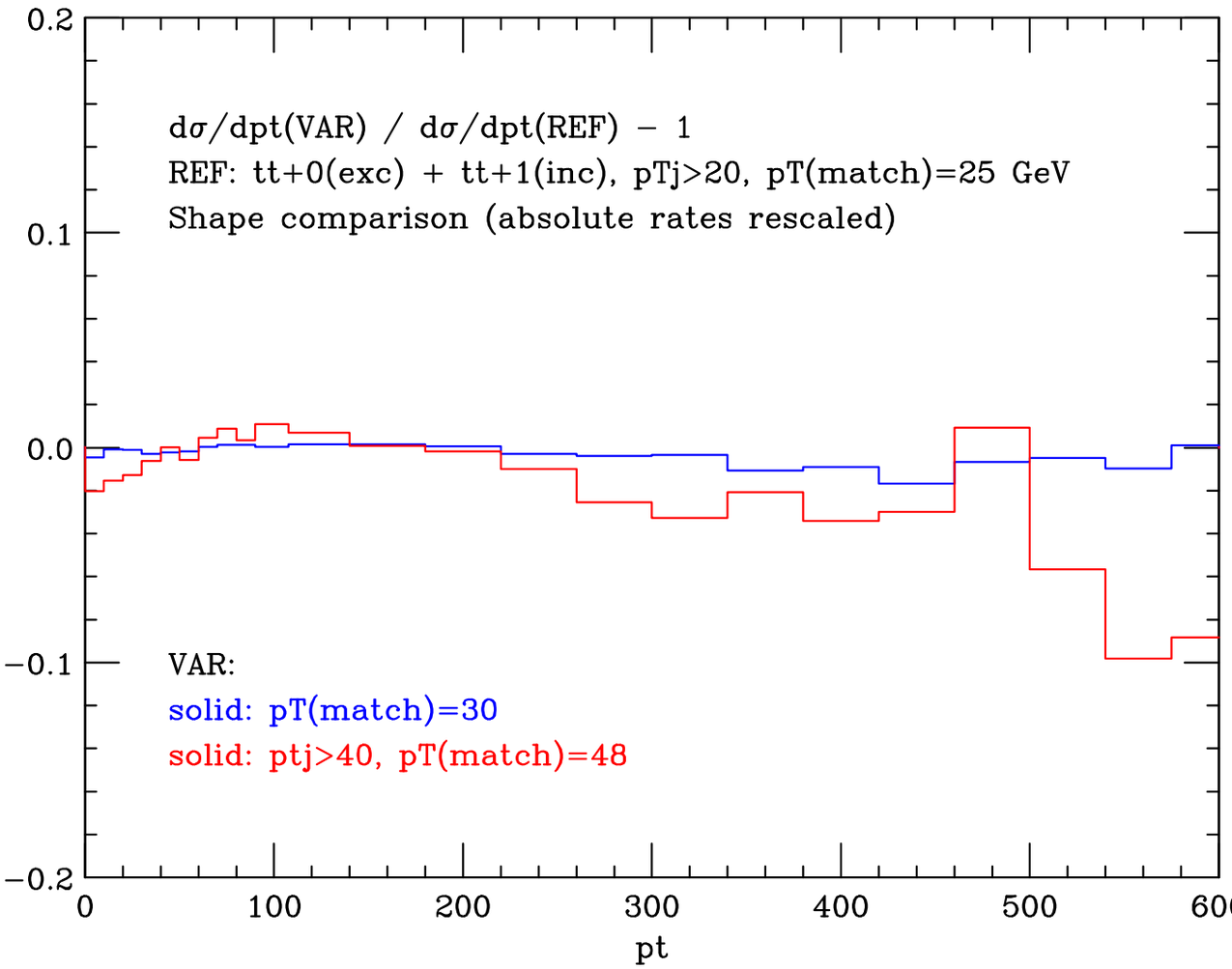

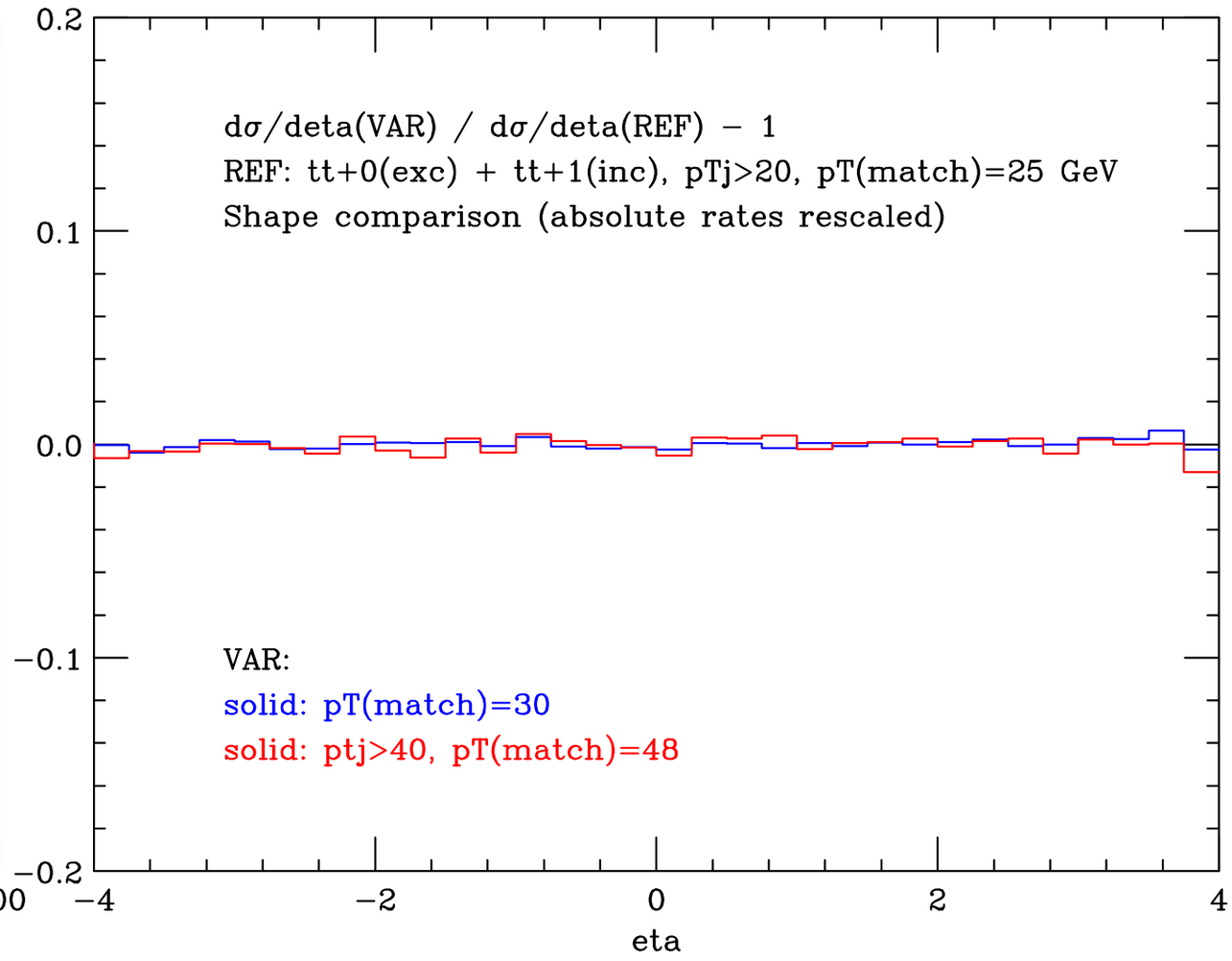

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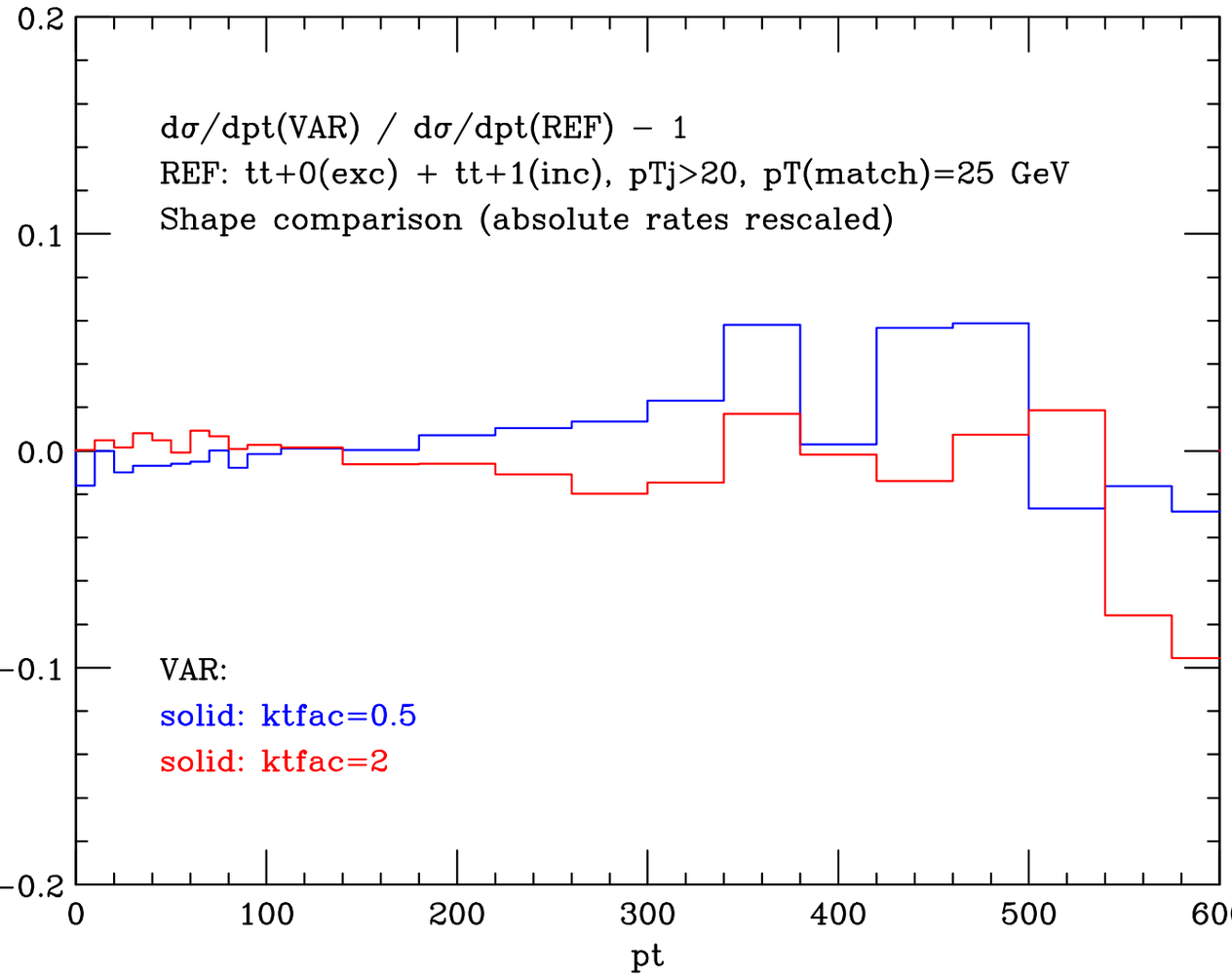
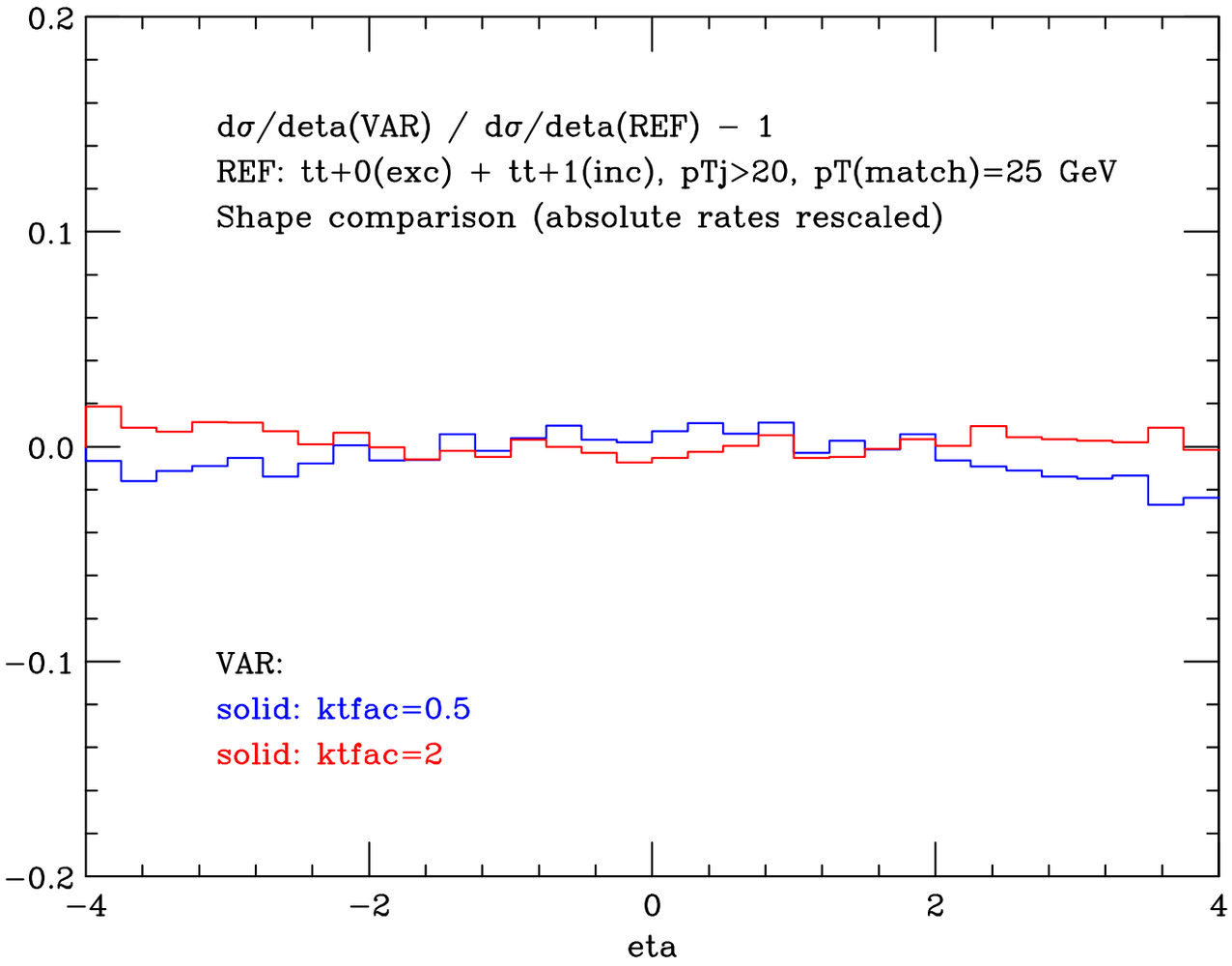
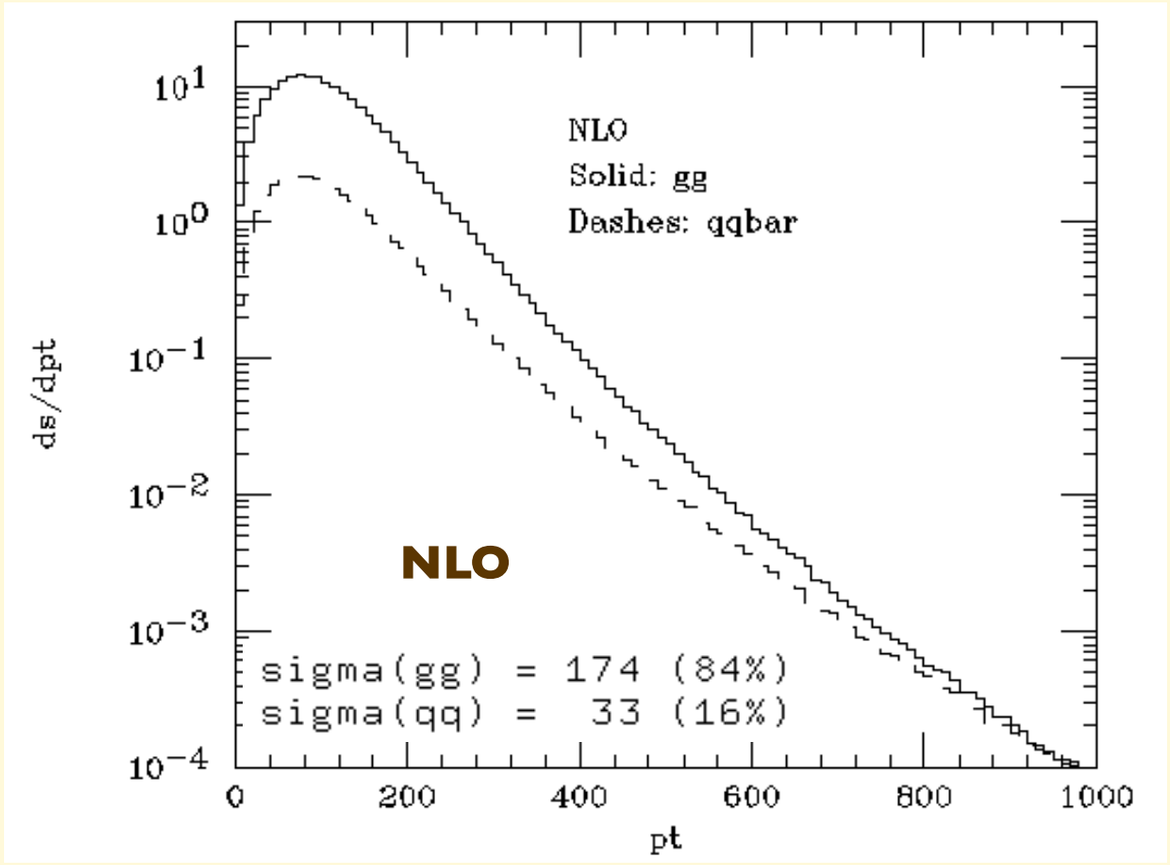
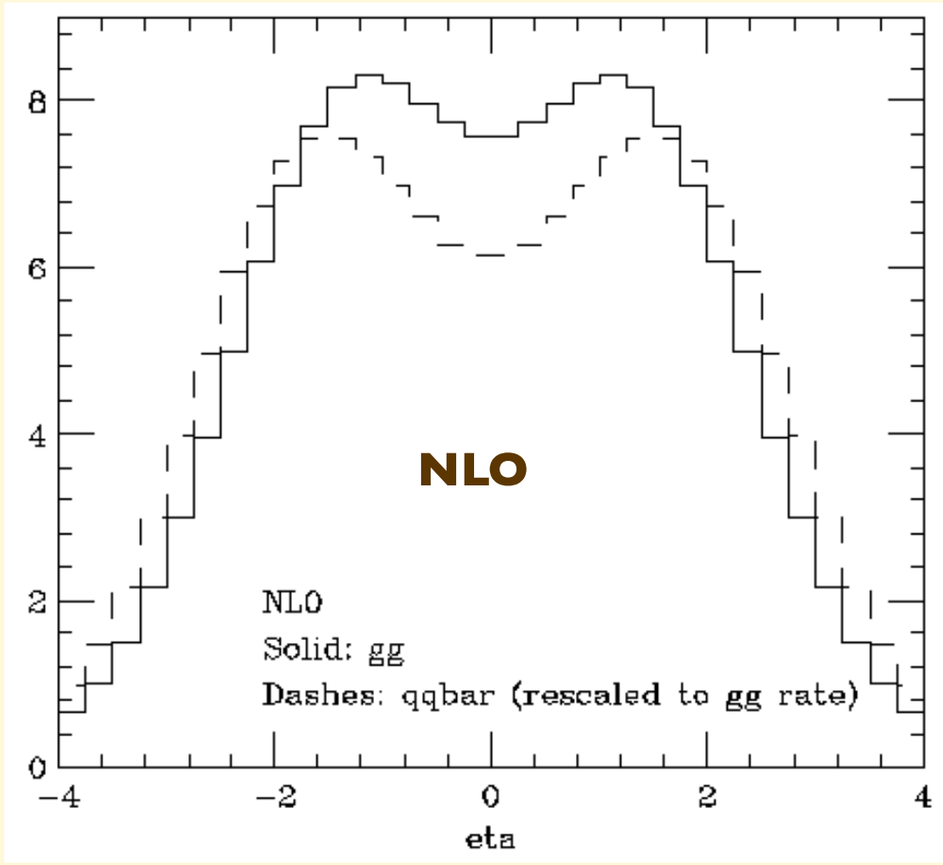
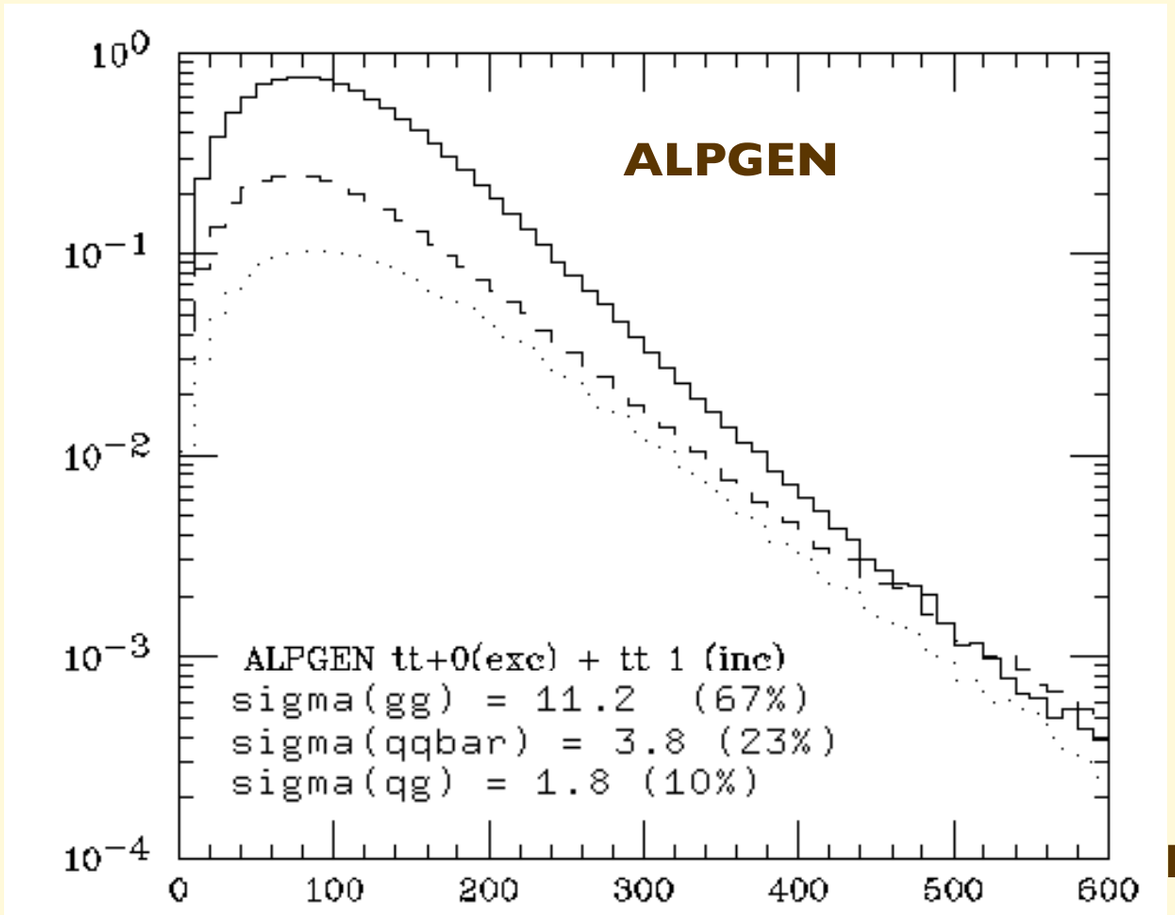




gg vs qqbar



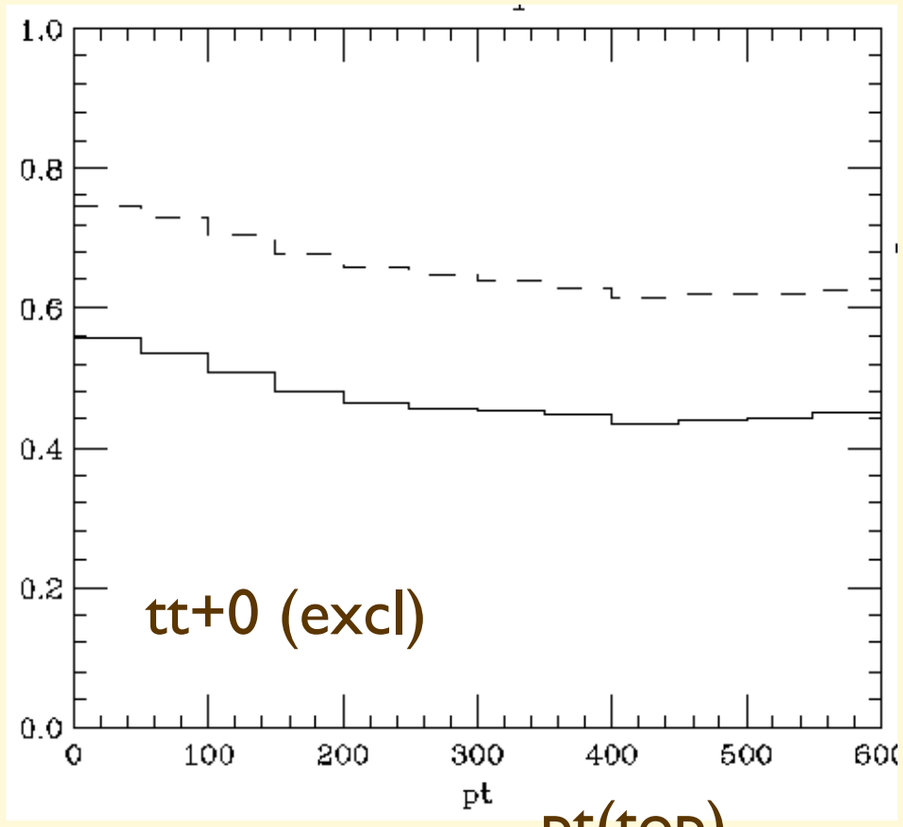




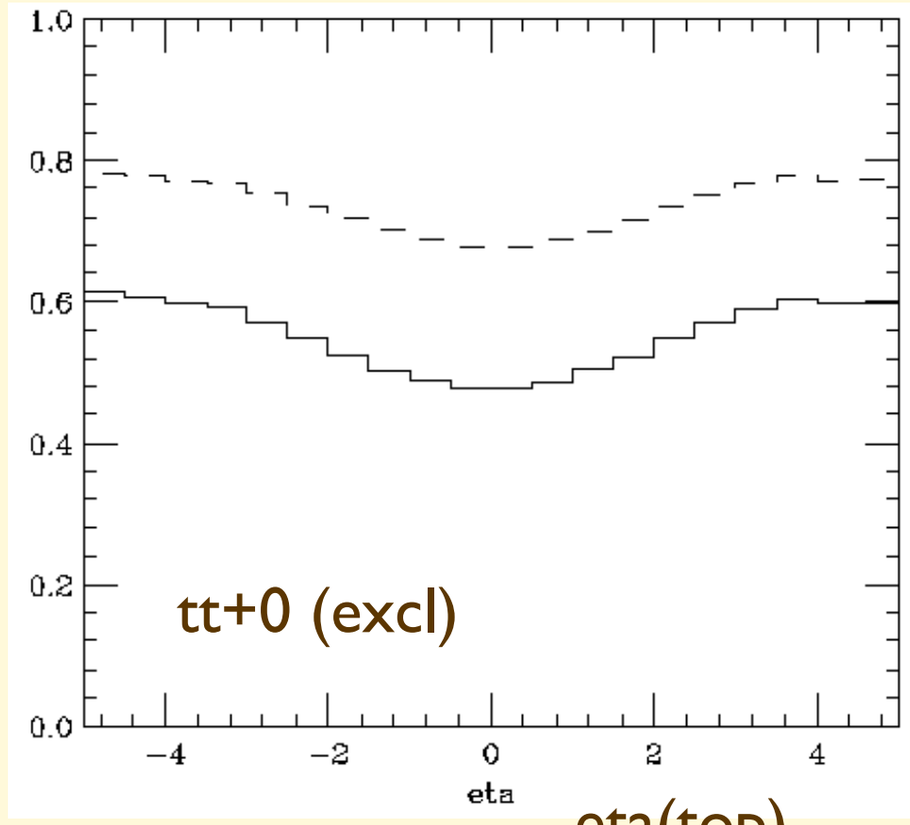
NB: rate includes BR

Matching veto efficiencies

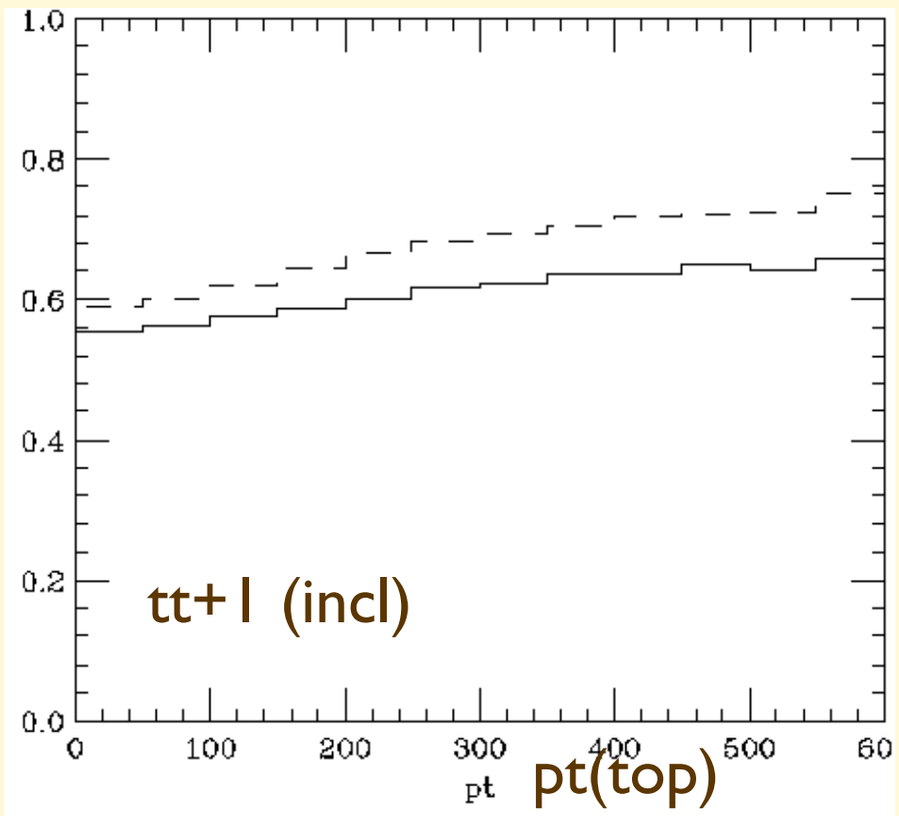
——— pT(match)=25GeV ---------- pT(match)=40GeV



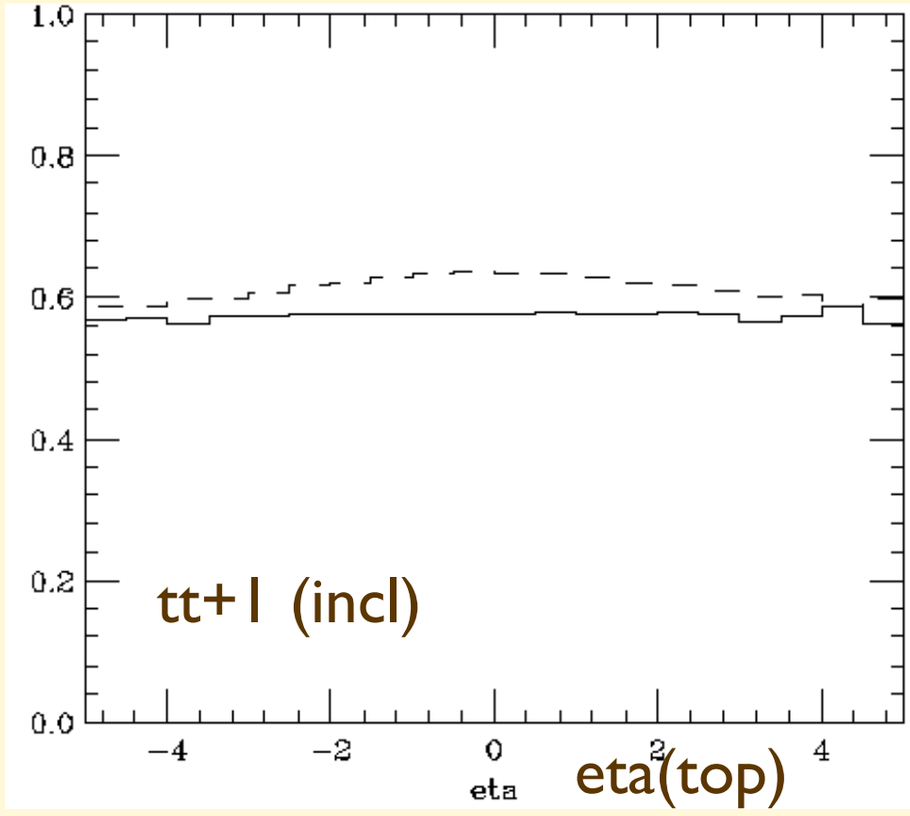
pt(top)



eta(top)



pt(top)



eta(top)

Matching veto efficiencies: gg vs qqbar

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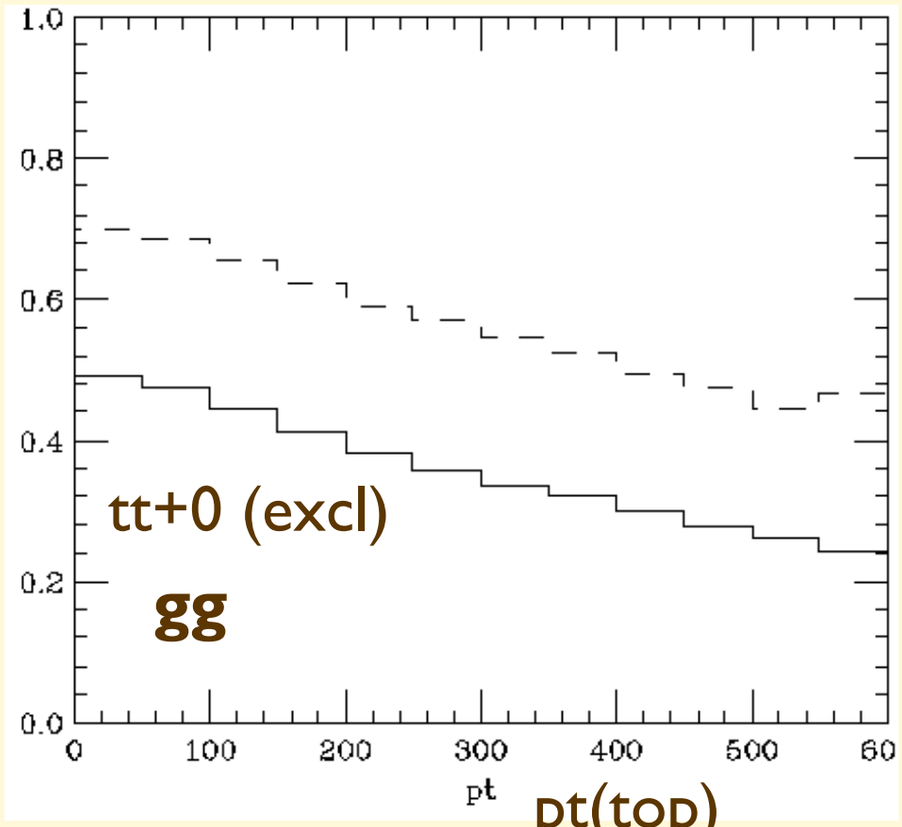
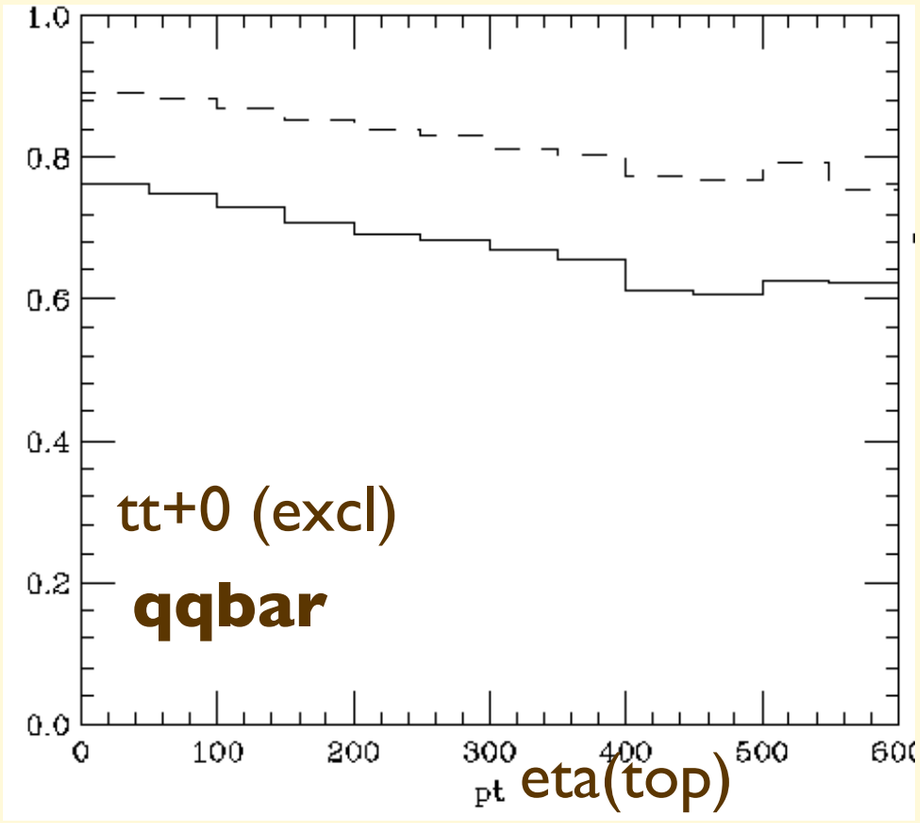


pt(top)



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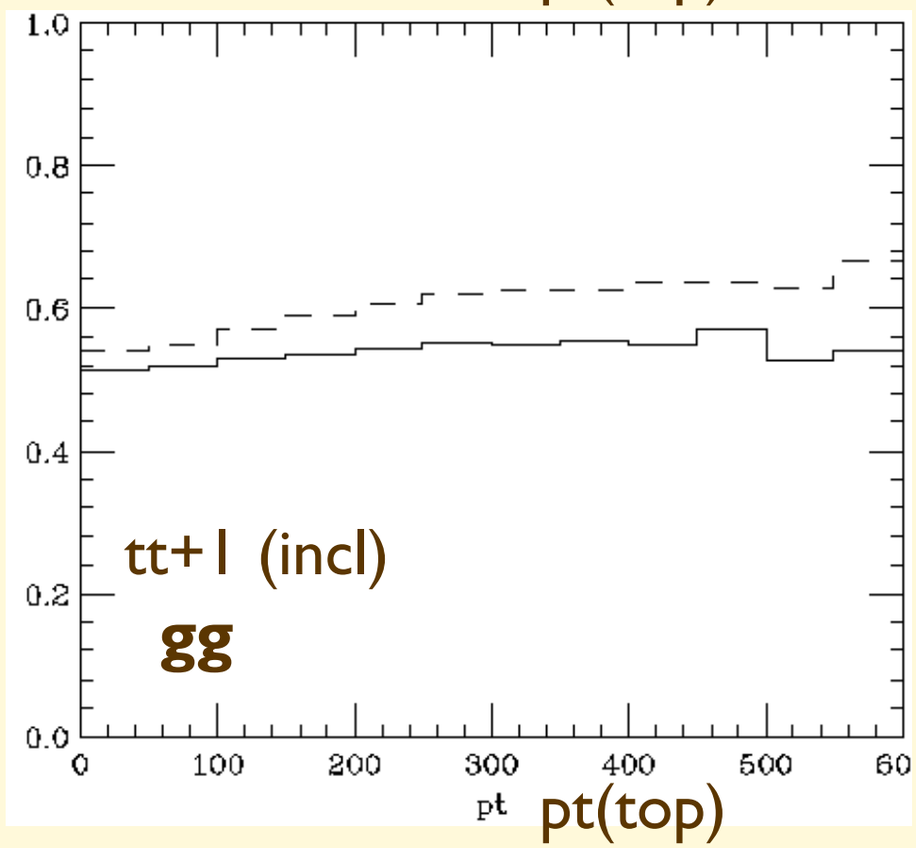

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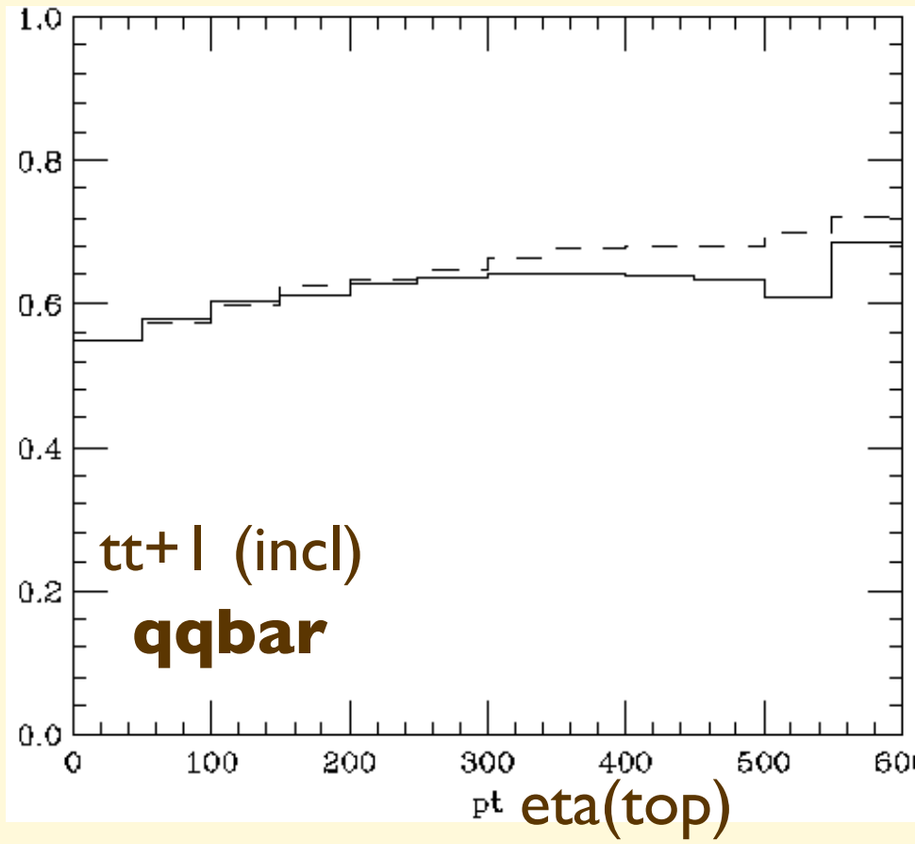

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