First look at k_t measurements using di-jet correlations

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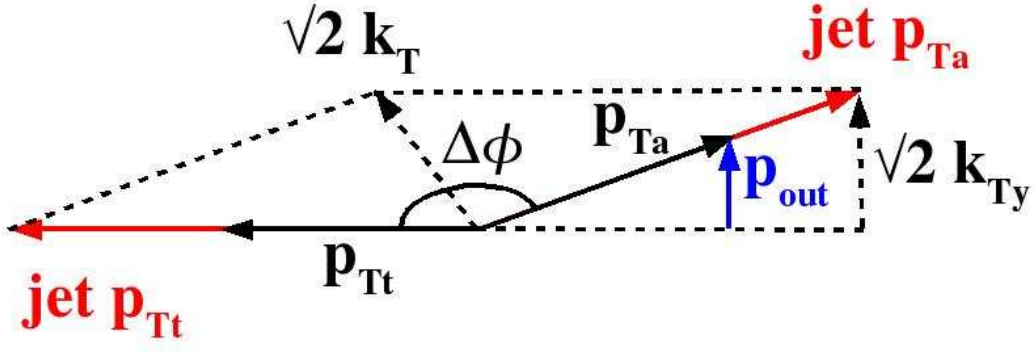
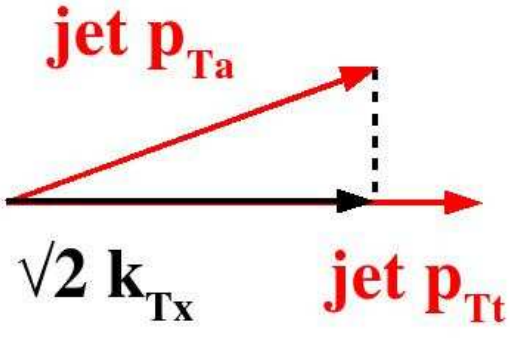
Intrinsic momentum k_T

$$< k_T^2 >= \frac{< p_T^2 >_{pair}}{2} =< k_T^2 >_{intrinsico} + < k_T^2 >_{soft} + < k_T^2 >_{NLO} \qquad (1)$$



- **Acoplanarity:** the transverse momentum of one jet does not lie in the plane determined by the transverse momentum of the second jet and the beam axes

$p_{out} = |p_{Ta}| sin\Delta\phi = \sqrt{2}k_{Ty}$



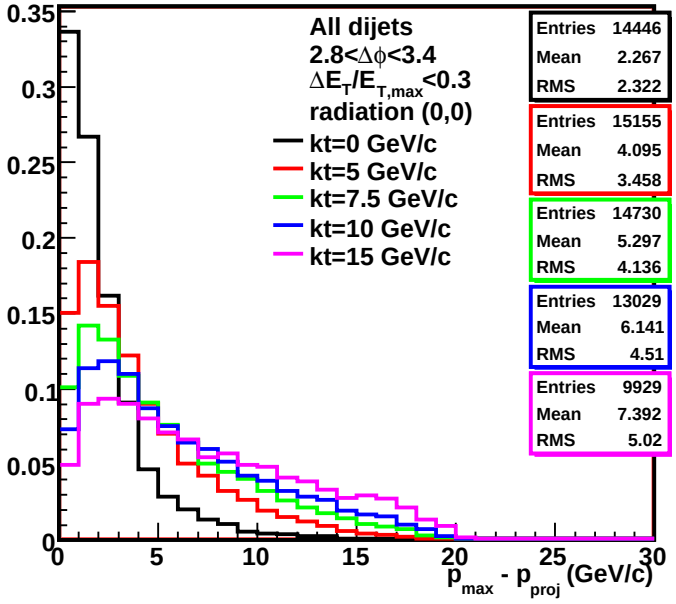
- **Momentum imbalance:** Partons p_T are not equal

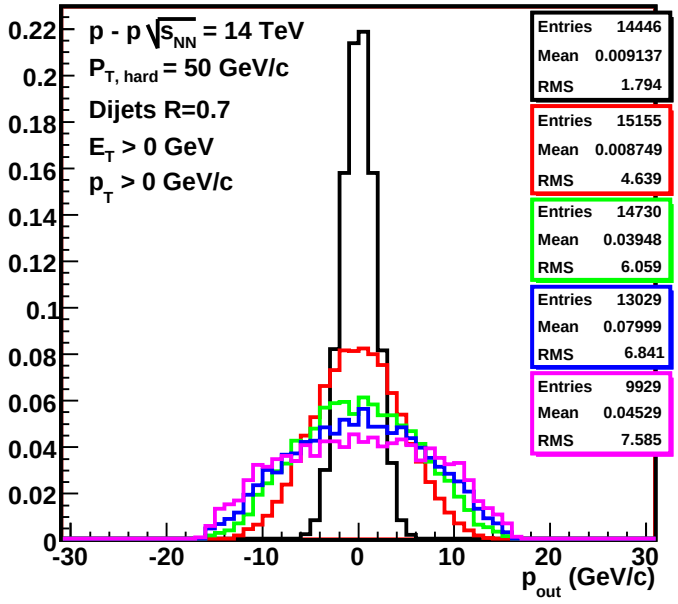
$p_{max} - p_{proj} = |p_{Tt}| - |p_{Ta} Proj(p_{Tt})| = \sqrt{2}k_{Tx}$

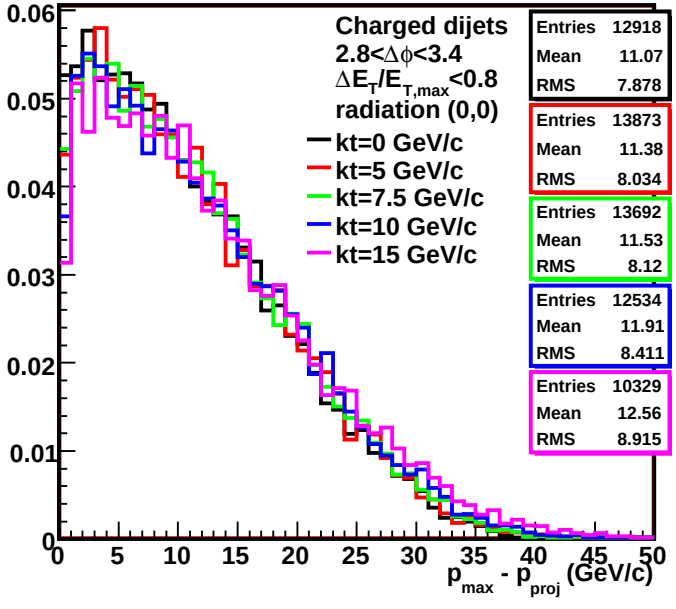
Monte Carlo Generation

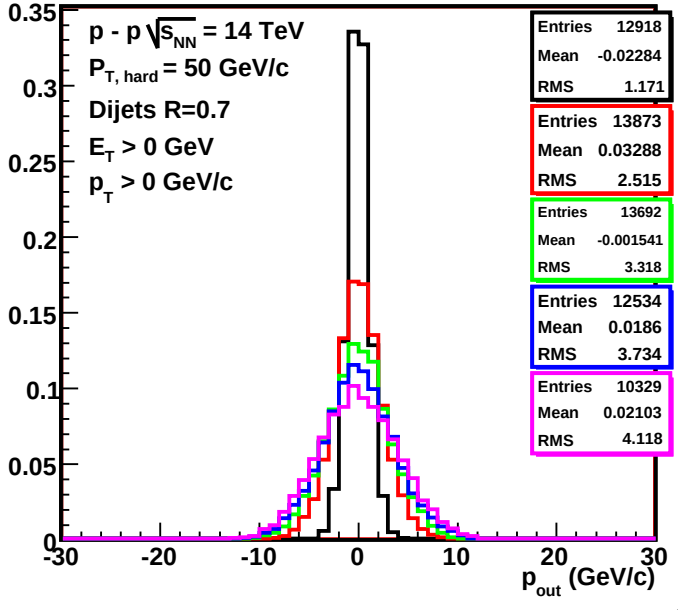
- **PYTHIA 6.2**
  - Proton - Proton
  - Centre mass energy: 14 TeV
  - Process types: kPyJets p_{Thard} = 50 GeV/c
  - k_T = 0, 5, 7.5, 10, 15 GeV/c
  - Initial/final state radiation
- **Cone Jet Finder Algorithm**
  - R<0.7
  - $|\eta|$<0.9
  - No p_T^{cut}
  - E_T>0 GeV
- **Real dijets**
  - All particles:
    $2.8 \text{ rad} < \Delta\phi < 3.4 \text{ rad}$
    $\Delta E_T / E_{Tmax} < 0.3$
  - Charged particles:
    $2.8 \text{ rad} < \Delta\phi < 3.4 \text{ rad}$
    $\Delta E_T / E_{Tmax} < 0.8$

Dijets k_T = 0, 5, 7.5, 10, 15 GeV/c whitout initial and final radiation

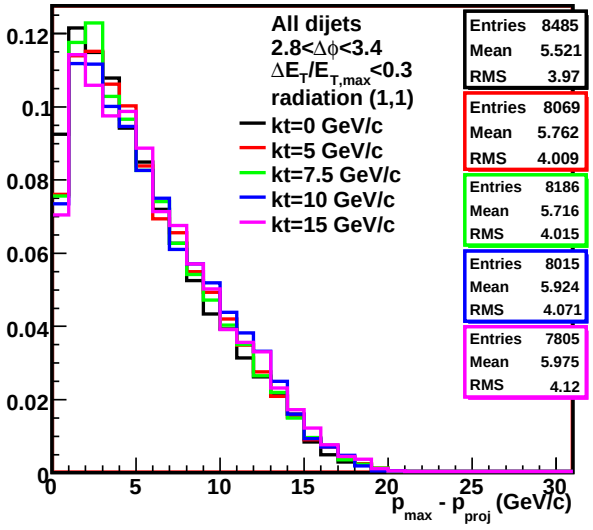


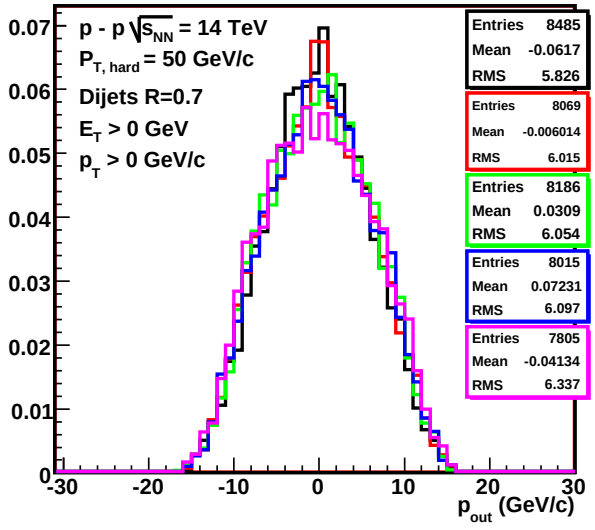


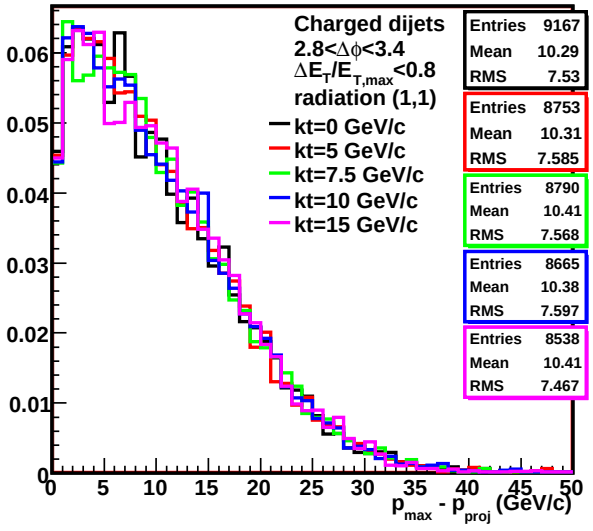


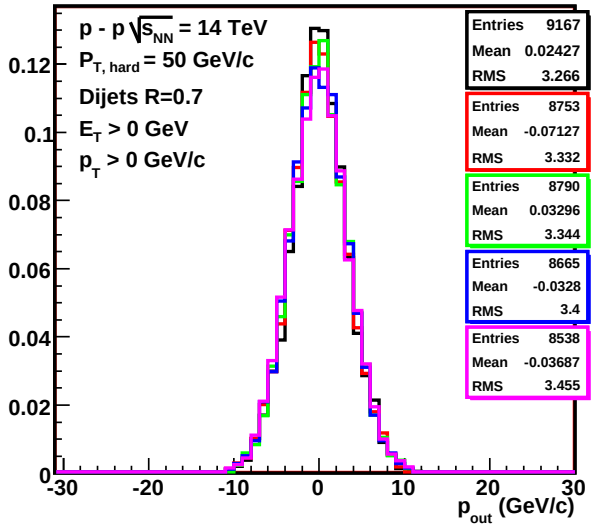


Dijets k_T = 0, 5, 7.5, 10, 15 GeV/c with initial and final radiation









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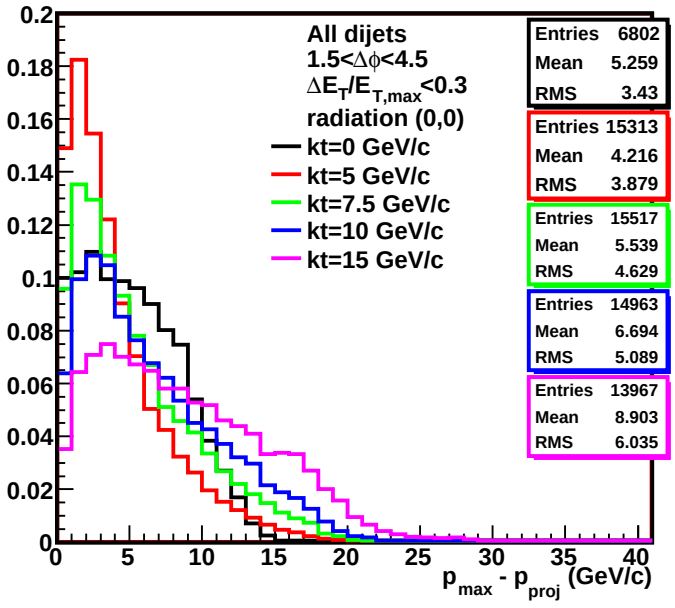

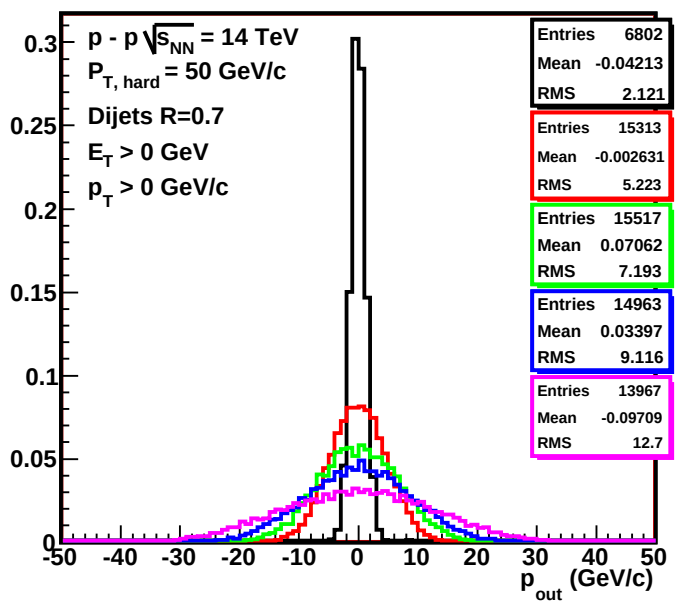

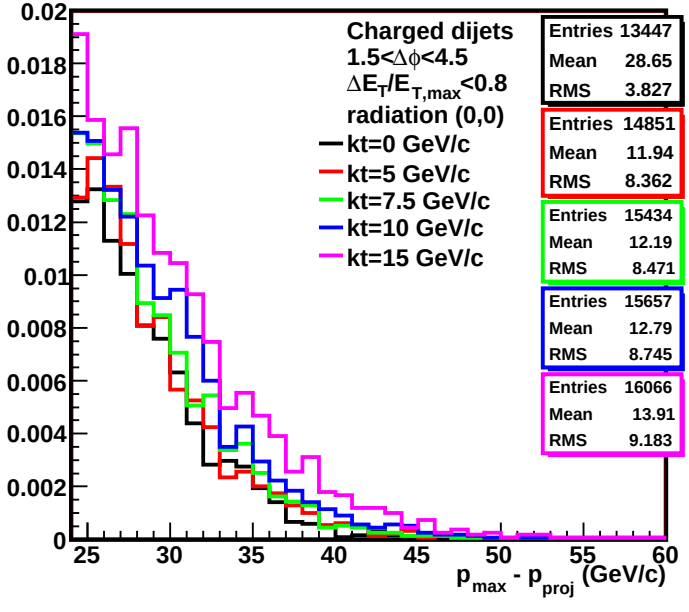

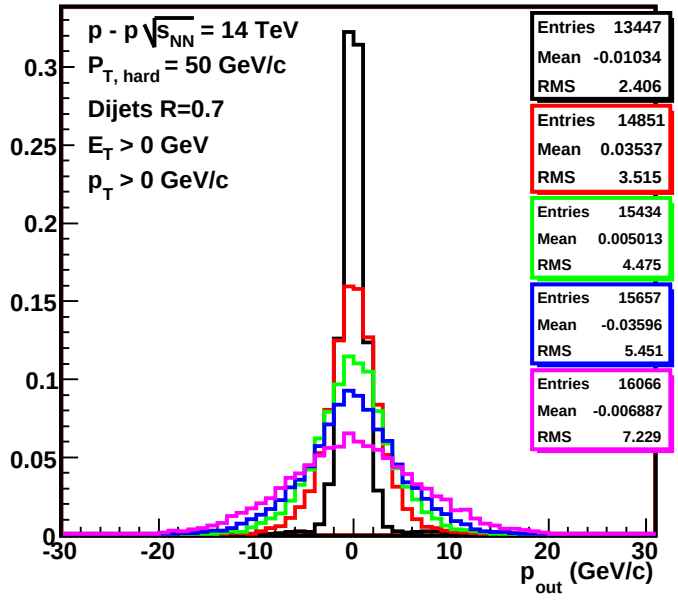

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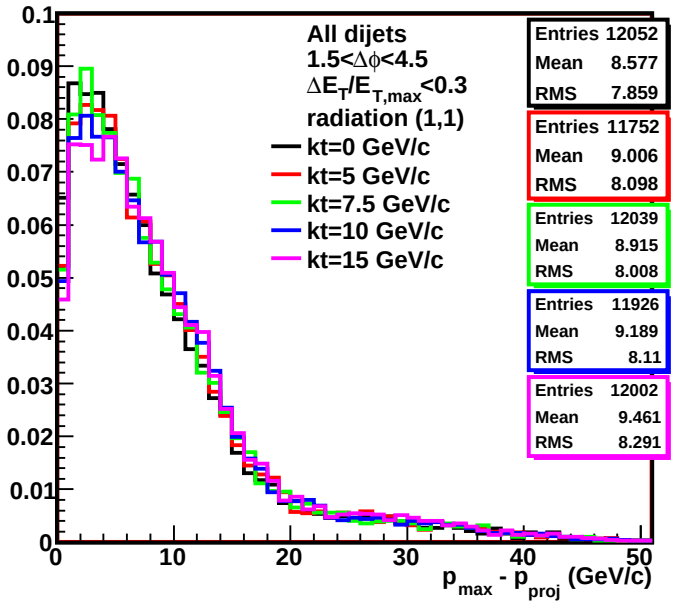

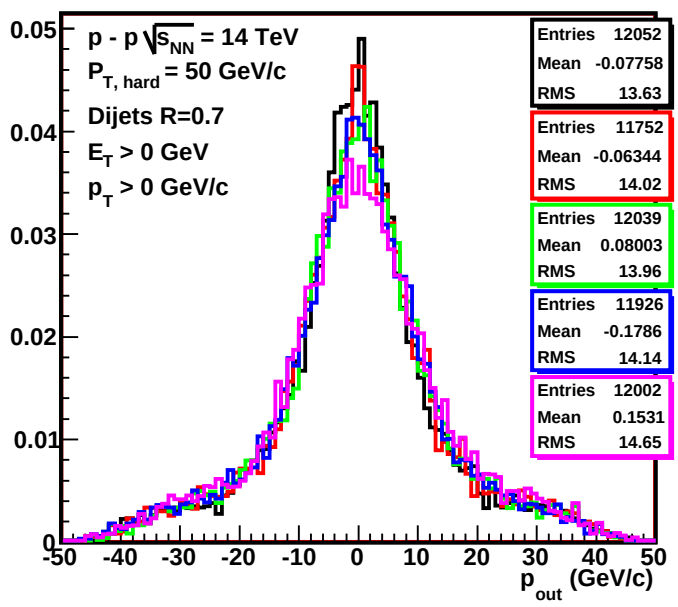

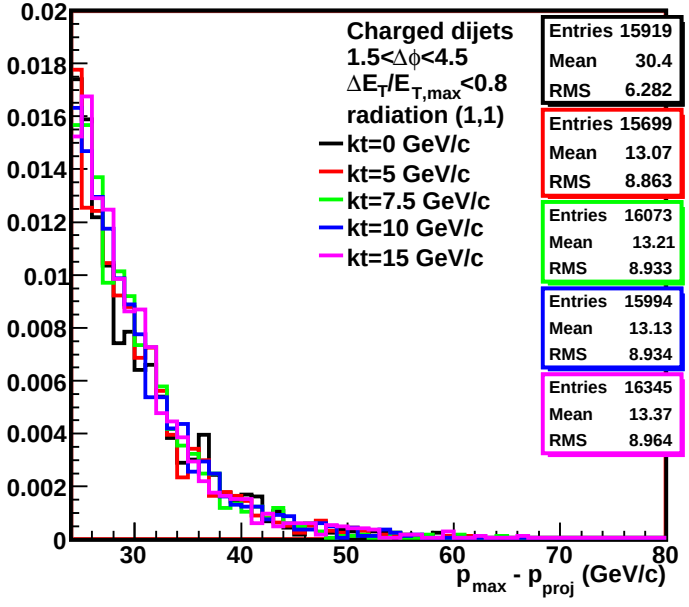

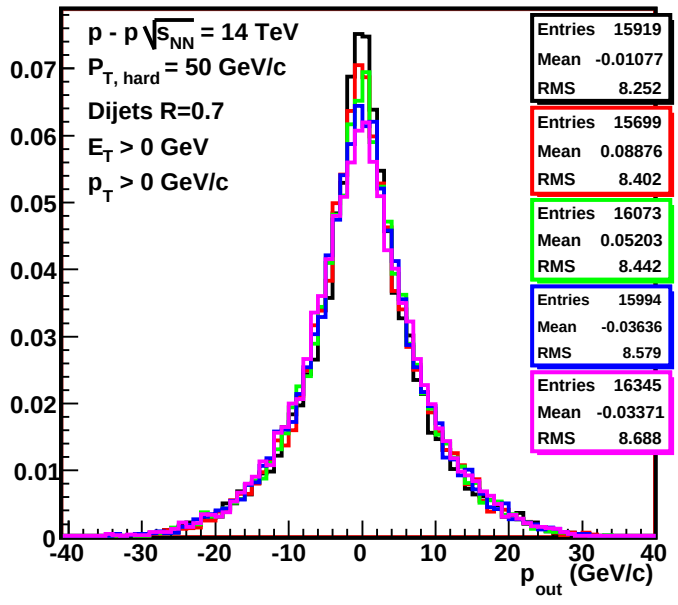

Comentarios

1. Con 1.5$< \Delta\phi <$4.5
   - para k_t=0 RMS de p_{out}=2.121
   - para k_t=5 RMS de p_{out}=5.223
   - para k_t=7.5 RMS de p_{out}=7.193
   - para k_t=10 RMS de p_{out}=9.116
   - para k_t=15 RMS de p_{out}=12.7
2. Con radiación inicial y fi nal el RMS de p_{out} es $\sim$ 14 para todos los casos
3. Lo mismo ocurre para partículas cargadas (RMS de p_{out} es $\sim$ 8)
4. En el caso de partículas cargadas la diferencia entre p_{max}-p_{proj} es mayor comprada con el caso de todas, se observan diferencias hasta de 40 Gev sin radiación inicial y fi nal y con radiación inicial y fi nal es hasta de 60. Esperariamos que la diferencia no fuera tan grande ya que estoy generando jets de 50 GeV/c y creemos que eso se debe a los jets falsos, por lo que el efecto en p_{out} no solo es de k_t sino también de que no tenemos jets back-to-back.