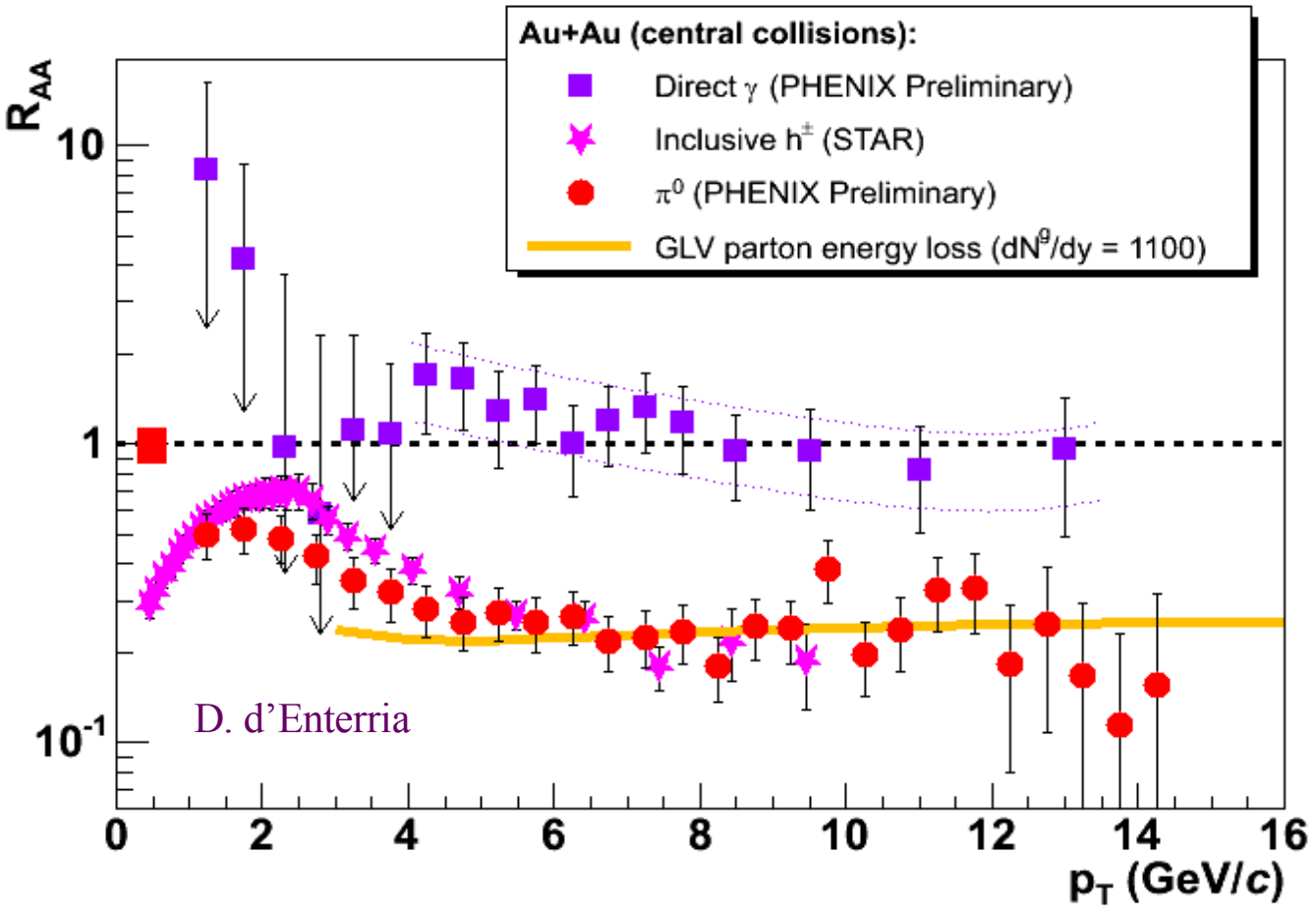
Déficit énergétique des jets « Jet quenching »

Et Alors ??

Les inclusifs : Facteur de modification nucléaire

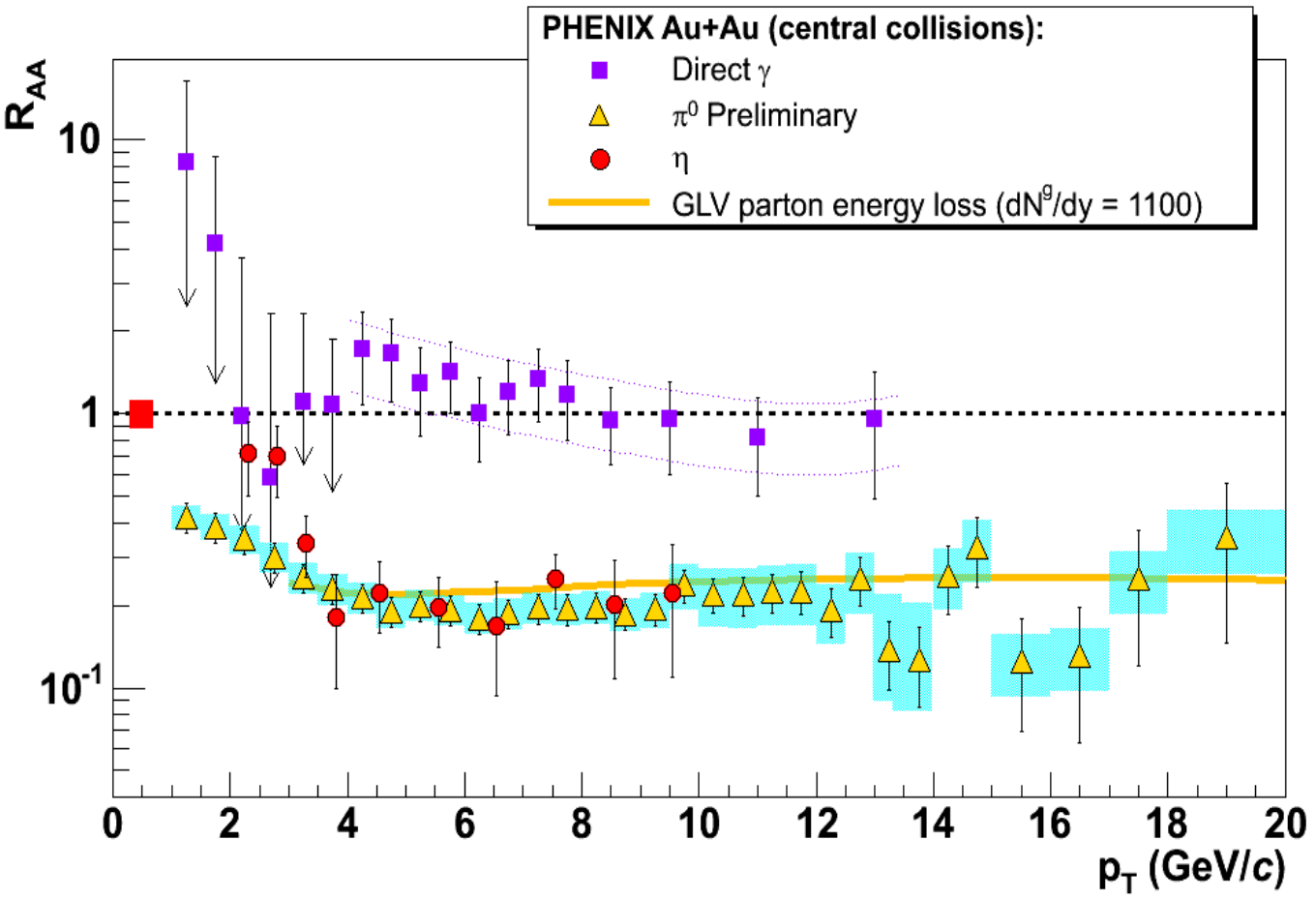
Nuclear Modification Factor



- Strong high-p_T hadron suppression
- But photons are not suppressed!

Interaction of high-p_T partons with a dense colored medium?

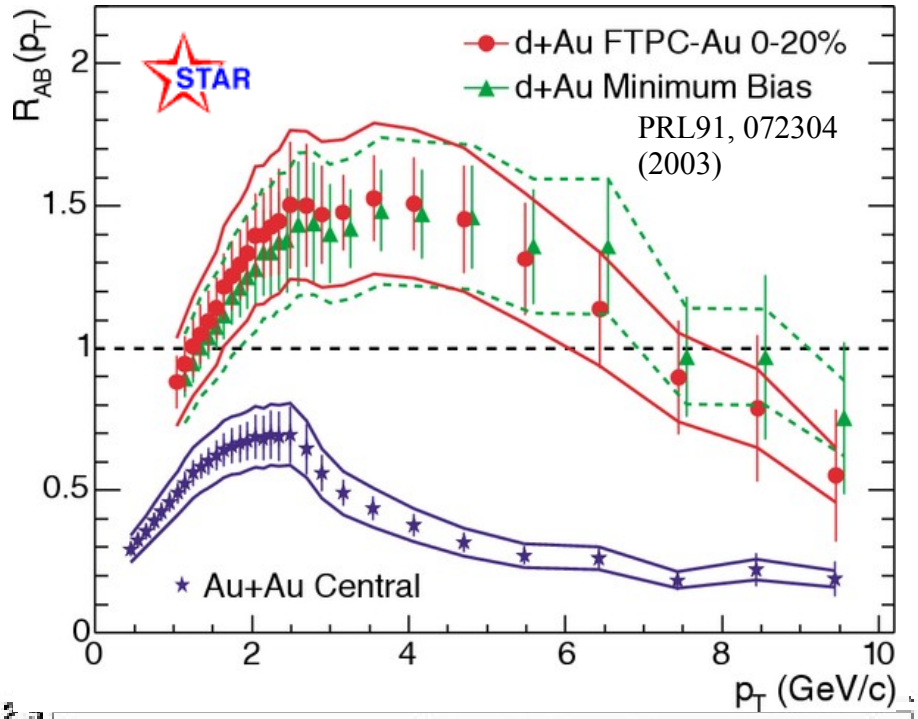
Inclusive Suppression



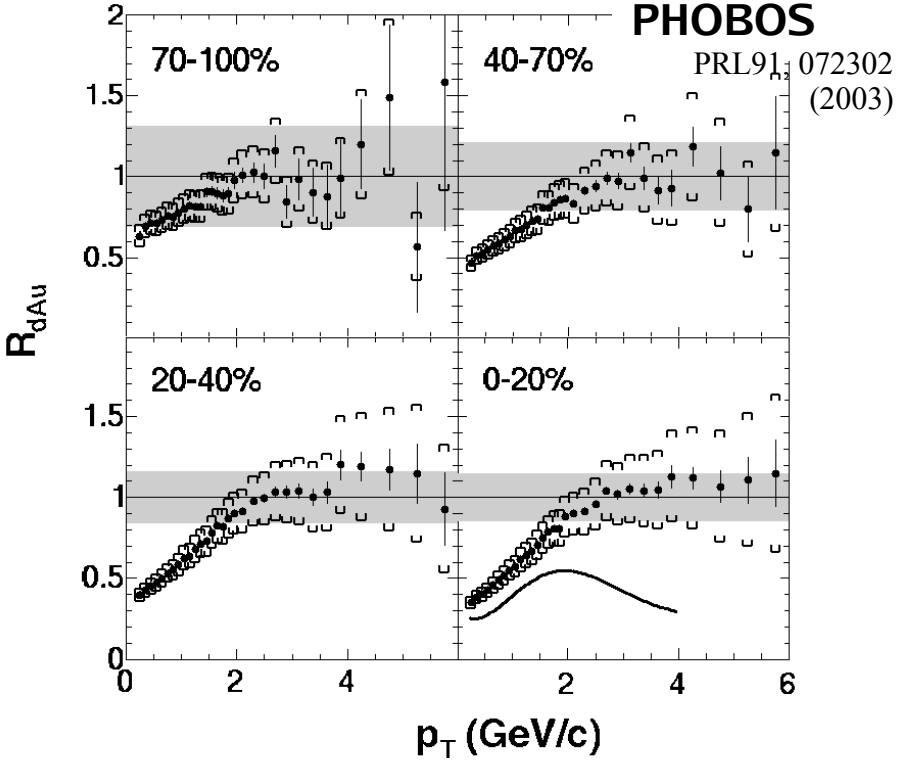
- constant large suppression over large p_T range
- should recover at higher p_T (energy loss is finite)
  - when?

- Etat initial
- Etat final

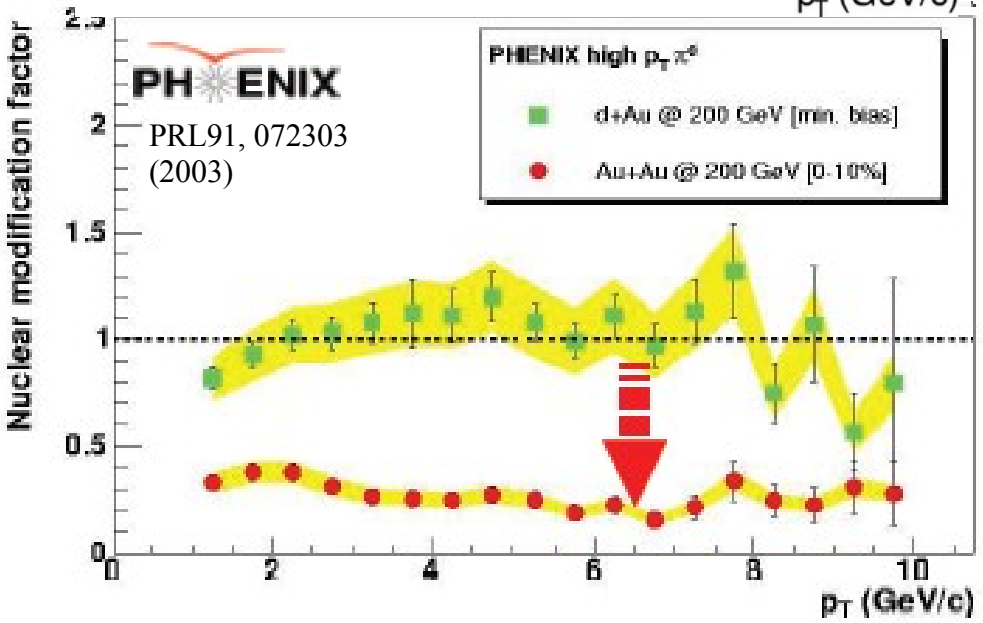
R_{AB} in dAu



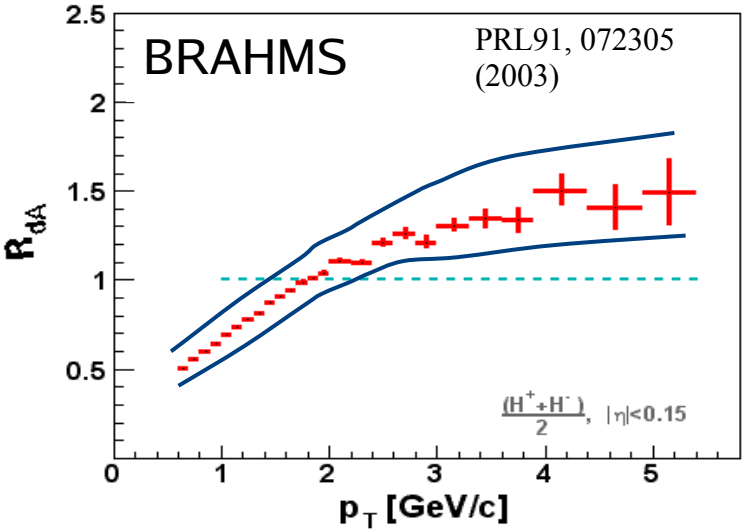
PRL91, 072304 (2003)



PRL91, 072302 (2003)



PRL91, 072303 (2003)



PRL91, 072305 (2003)

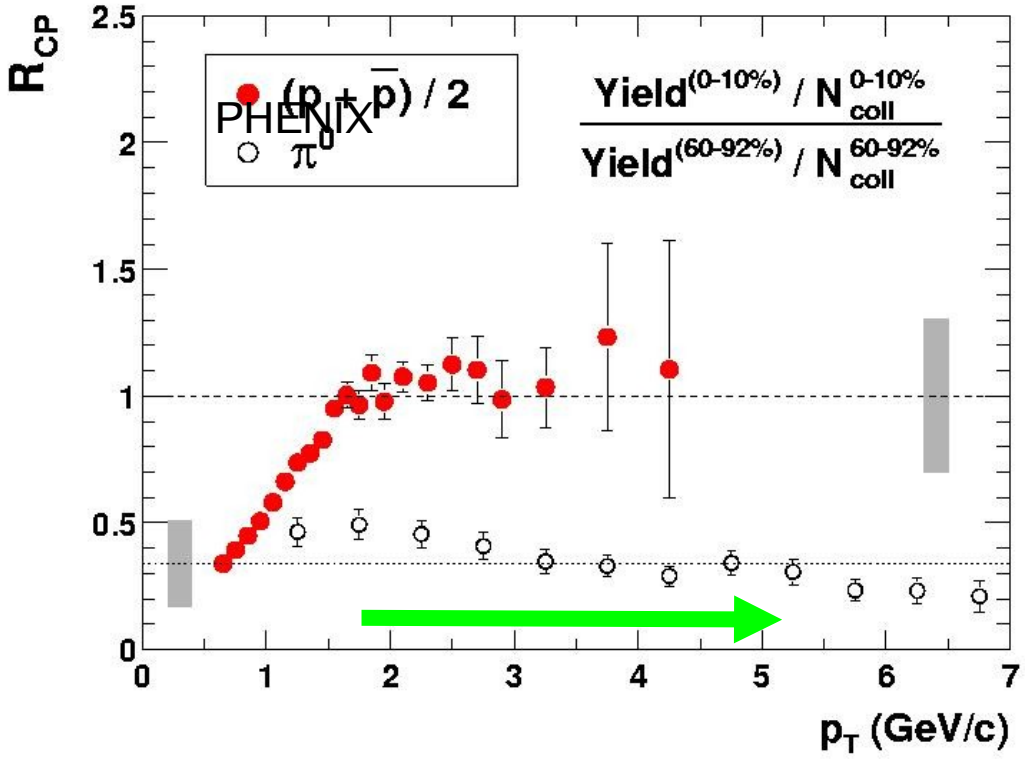
Avantages/Inconvénients

- Indication de l'effet

- Dépend de la qualité de la référence p+p
- Ne dit rien sur le devenir...

Why Recombination: R_{AA}

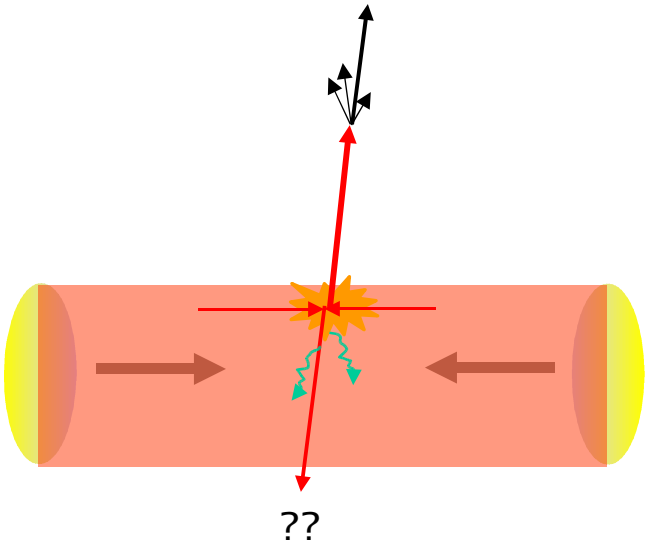
- No jet quenching for baryons? (R_{AA} ~ R_{CP} ~ 1)
  - In the range P_T ~ 1.5 … 5 GeV/c.
  - Jet quenching not on the parton level?



Les exclusifs

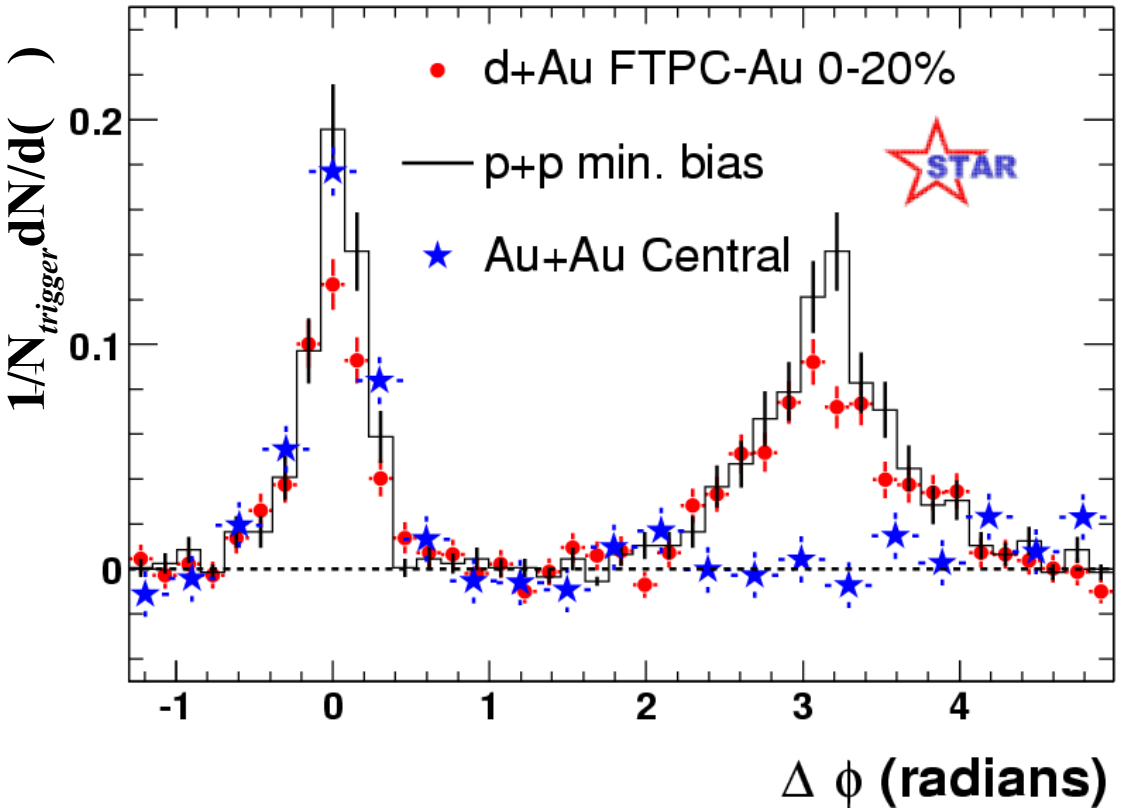
Des corrélations à la reconstitution

Back-to-back correlations



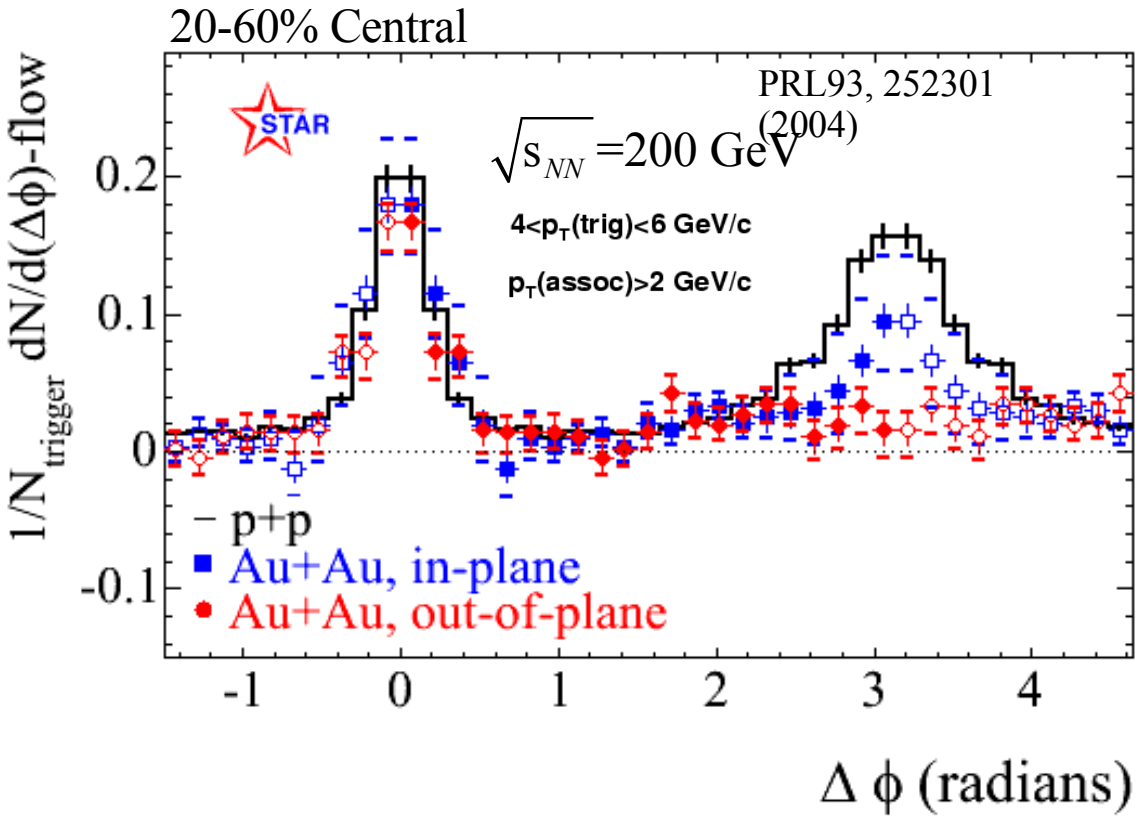
$$p_T^{assoc.} < p_T^{trigger}$$

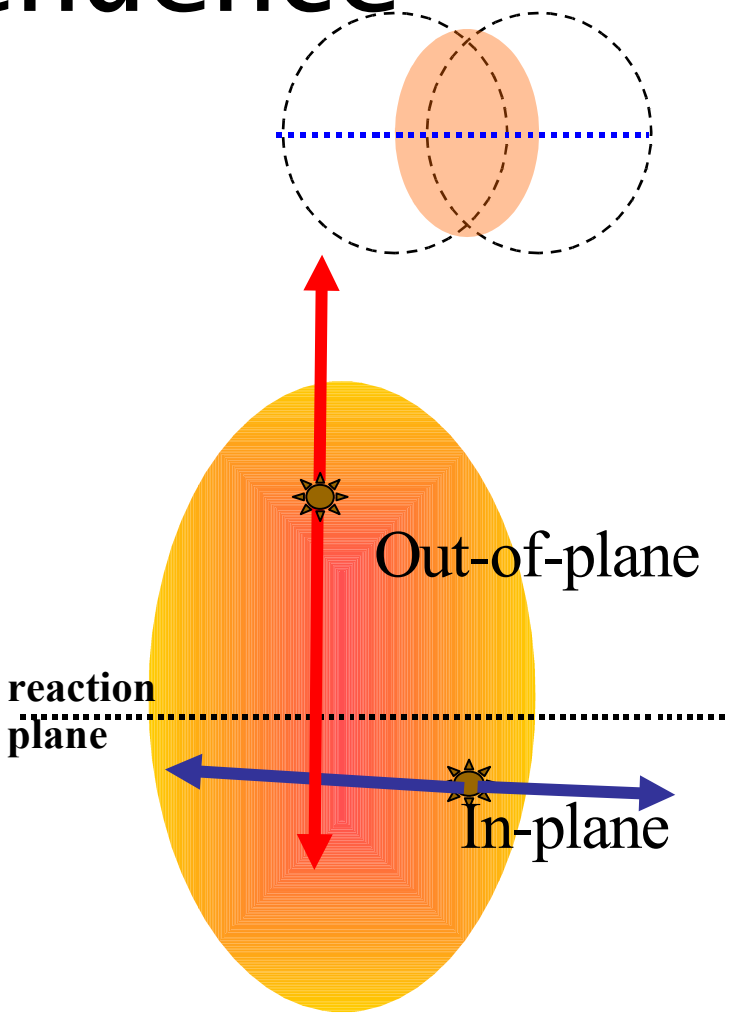
$$D(\Delta\phi) \equiv \frac{1}{N_{trigger}} \frac{dN}{d(\Delta\phi)}$$



PRL91, 072304 (2003)

Path length dependence





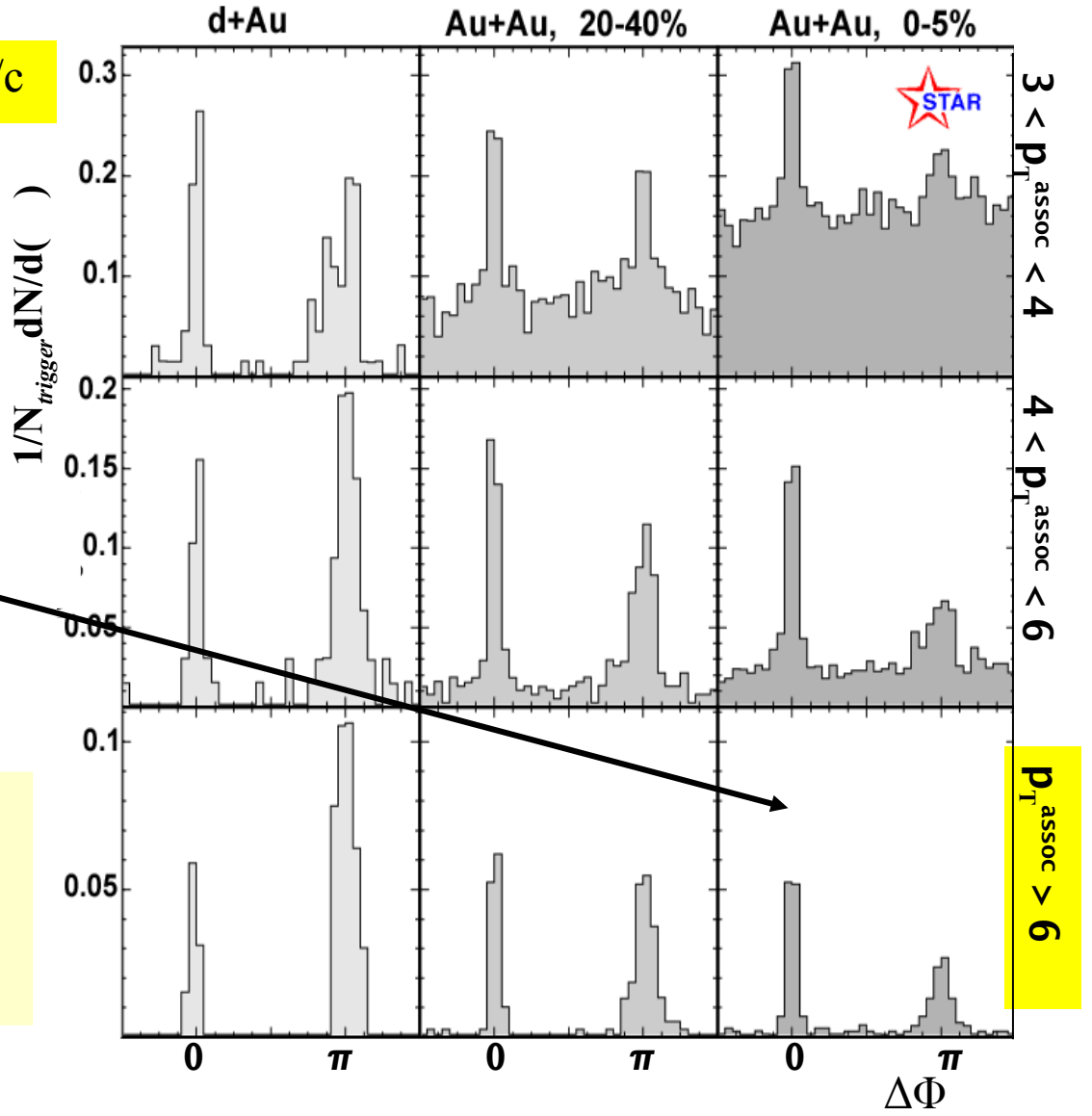
Clear indication of in-medium path length dependence of the hadron suppression

Azimuthal correlations at higher p_T

$8 < p_T^{trigger} < 15$ GeV/c

- Higher associated p_T
- Beyond "intermediate p_T" and into fragmentation region
- Combinatorial background is negligible

- Clear, unambiguous recoil peak: dijets in central collisions
- Away-side yield is suppressed but finite and measurable



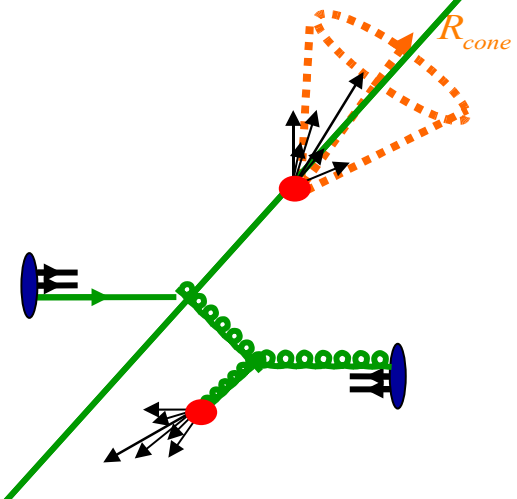
nucl-ex/0604018

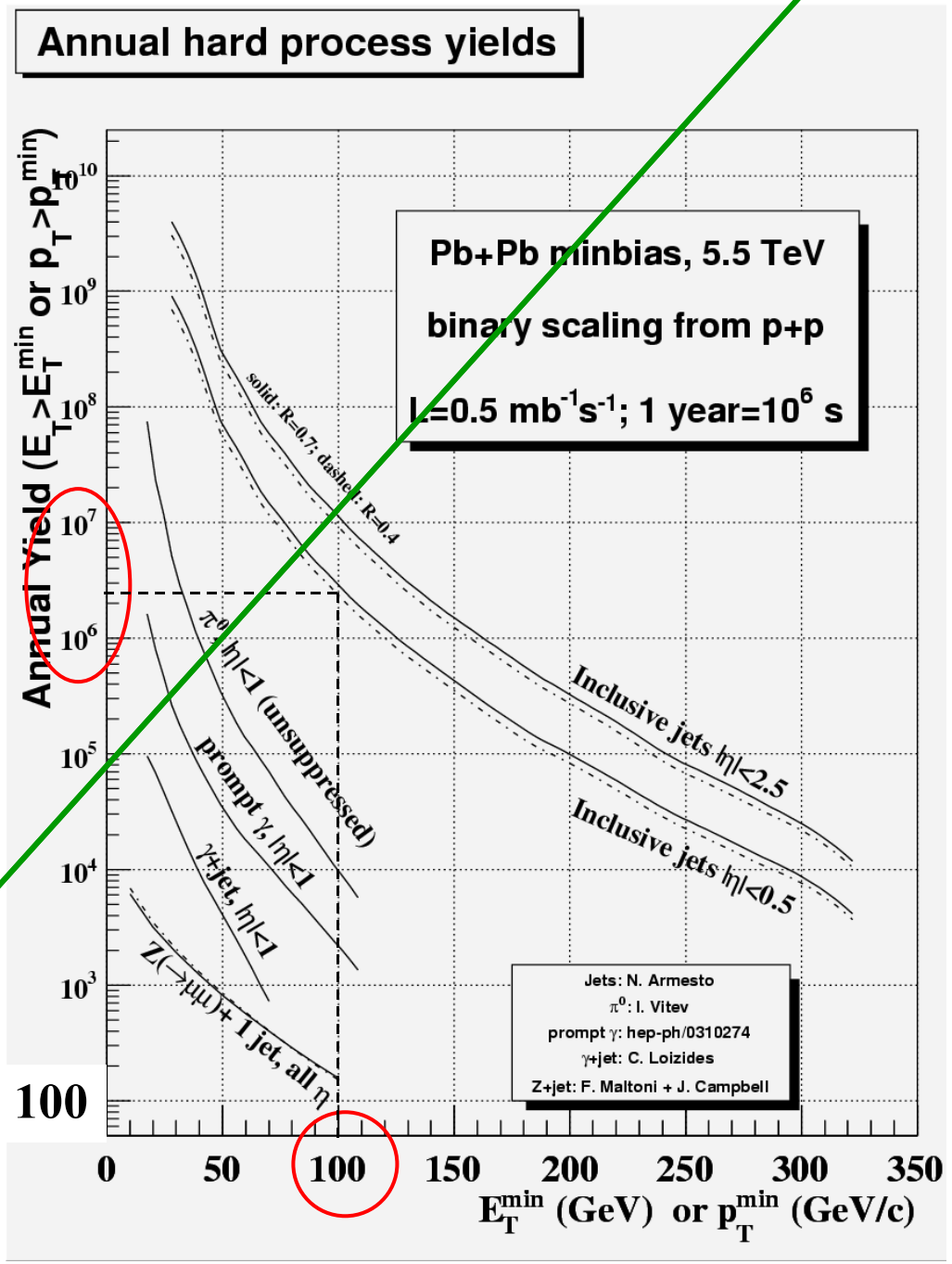
Jet rates at the LHC

Huge jet statistics from E_T ~10 GeV to E_T~100 GeV

- Jets with E_T > 50 GeV will allow **full reconstruction of hadronic jets**, even in the underlying heavy-ion environment.

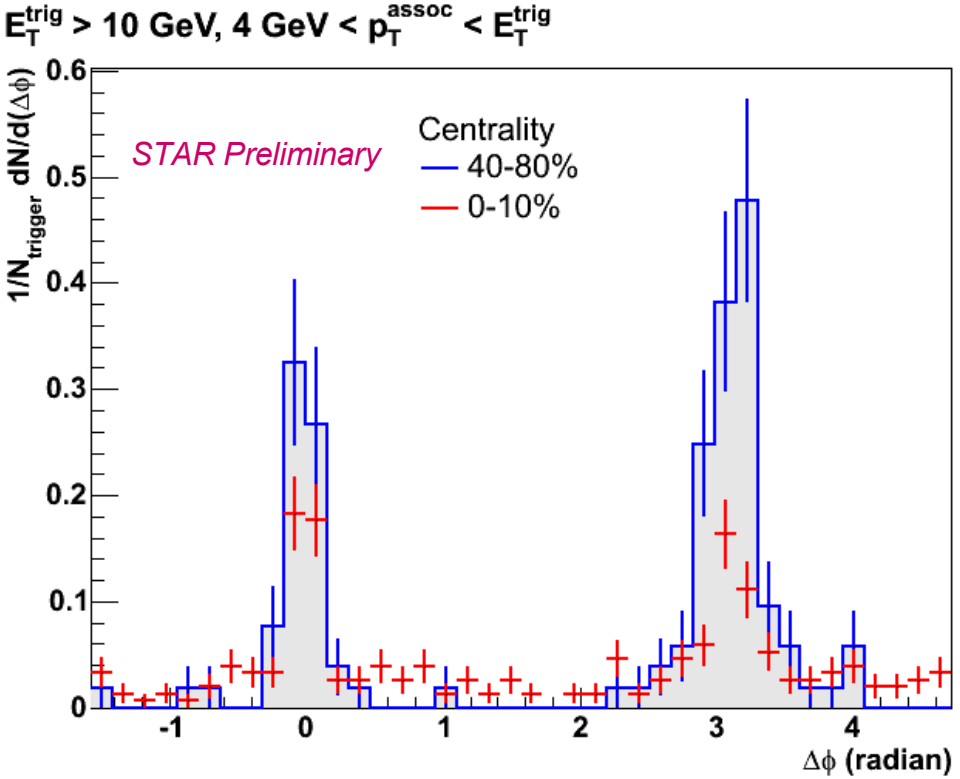
- Multijet production per event extents to ~ 20 GeV





Les photons : l'étalon des jets

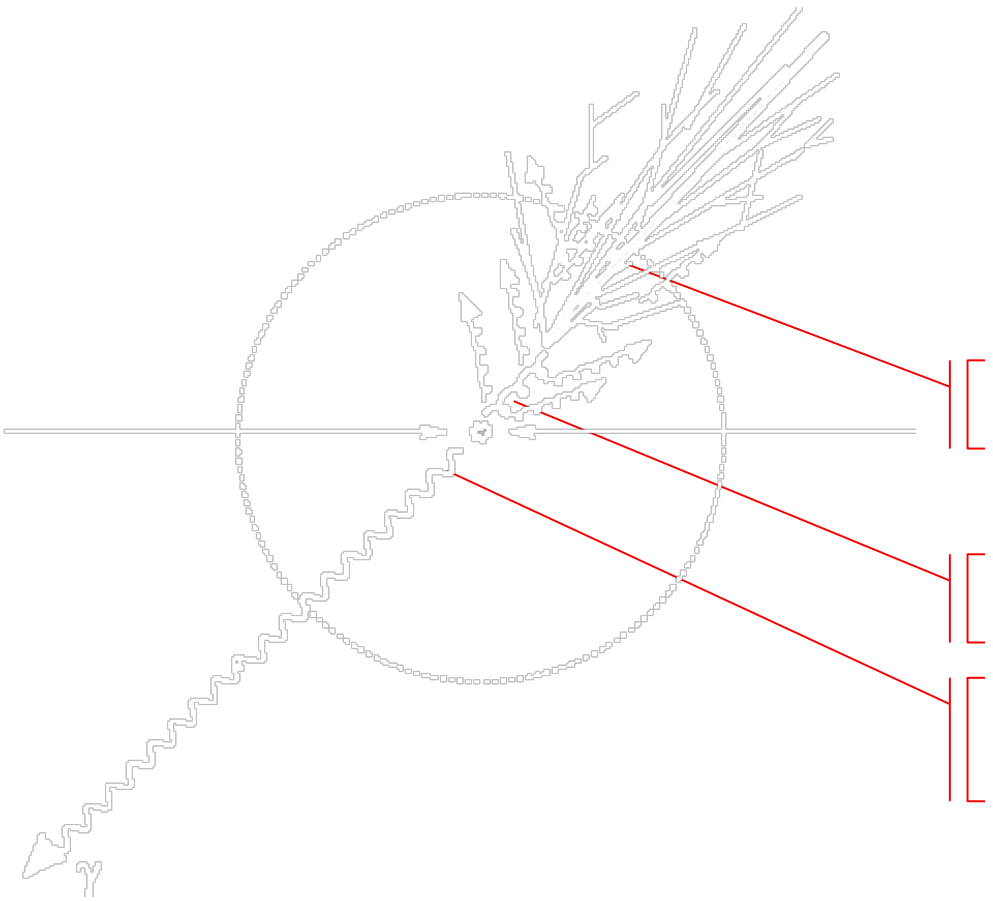
The Ultimate Probe: γ-Jet

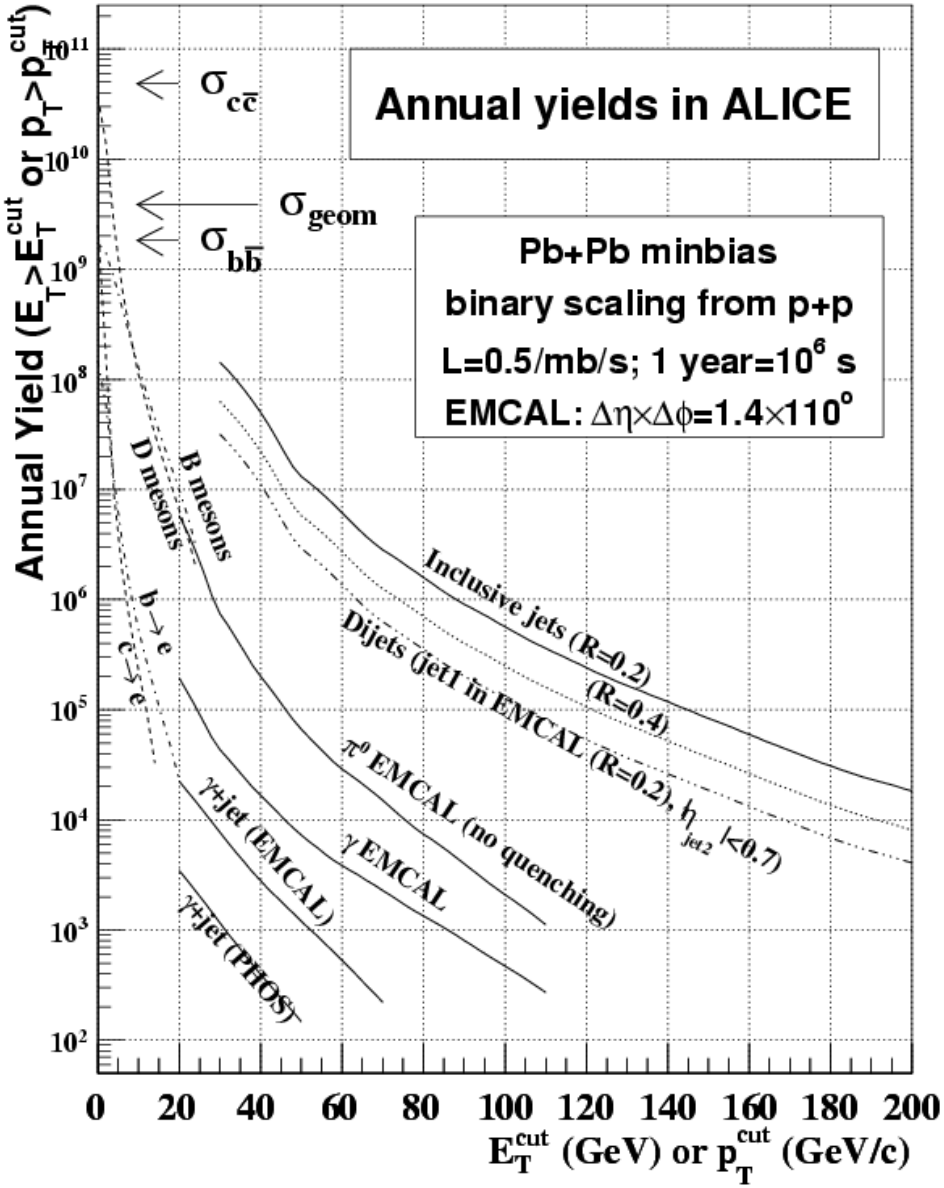


- photon tag
  - potentially clean jet preparation
- clear near-side and away-side correlation peaks
- strong contamination from π^0 decay photons
  - reduction in near-side strength compatible with direct photon component
- work in progress …

γ-jet

- ✘ Statistiques.
- ✓ Accès à l'énergie du jet.





Comparaison / Jet γ-jet

De la nécessité de bien extraire les photons directs

PID, paramètres

- Événement par événement :
  - γ / π°
    - Forme de la gerbe électromagnétique (SSA).
    - Temps de vol.
  - Leptons et hadrons chargés (accord trajectoires TPC - traces EMCal).
    - Distance TPC / EMCal.
    - E/p.
- Méthode statistique :
  - γ / π°
    - Masse invariante.

En avant première : Ahmed HH et SICA

Cliquez pour ajouter une figure

Tout ce que je n'ai pas dit

- Les corrélations à deux particules et le cône de Mach
- Effet Cérenkov
- Les corrélations à trois particules
- Biais et Déclenchement
- Effet Couronne et/ou matière profonde (différentiel)
- ...

A suivre...

L'avis du compagnon du père Fouetard...
et les autres bien sûr...