

Réunion OPERA

7 juillet 2010

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- Description réseau de neurones
- Test outil de reconstruction de gerbe em :
 - Electron
 - Gamma
- A venir

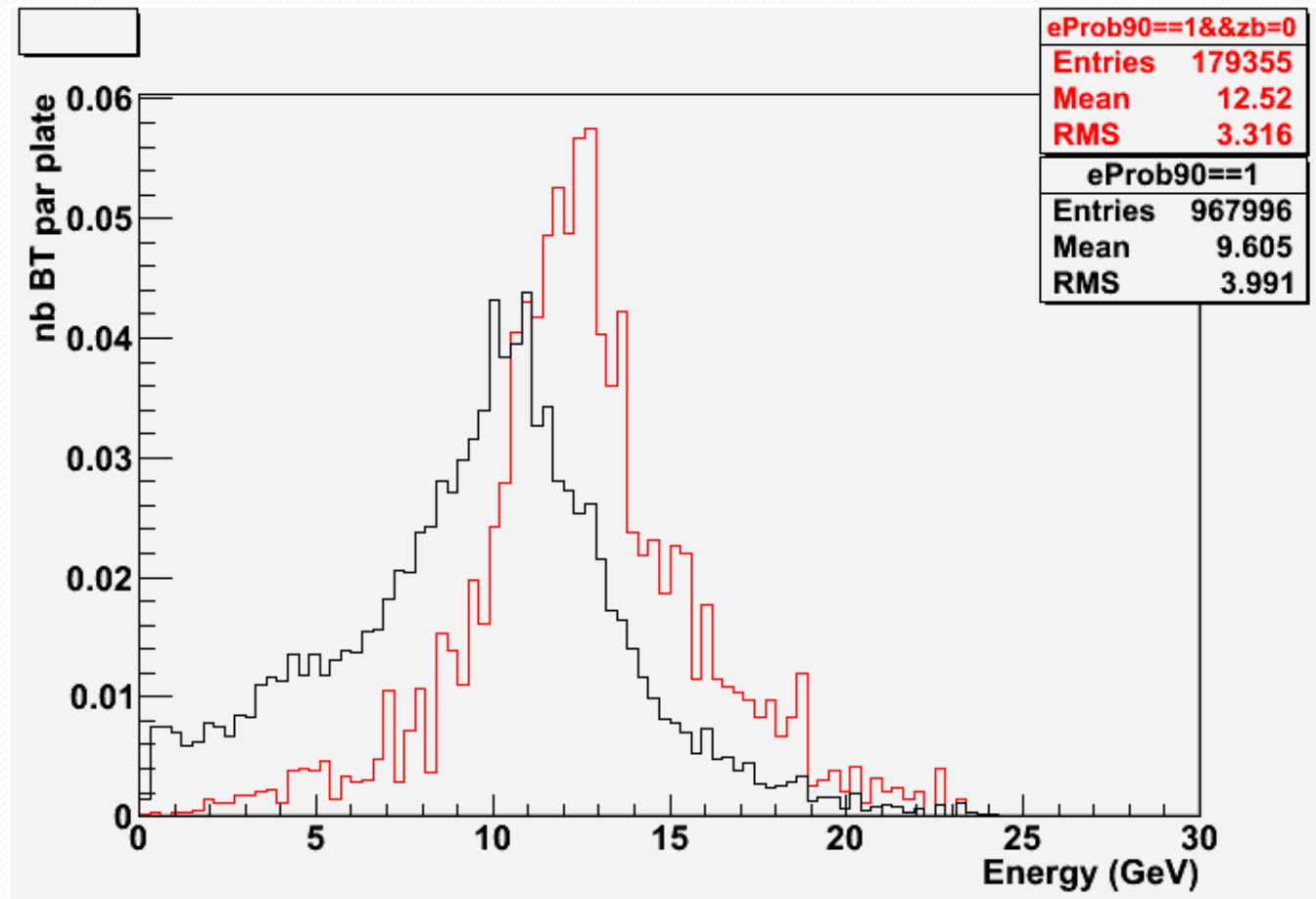
Identification de particules dans la gerbe : réseau de neurones

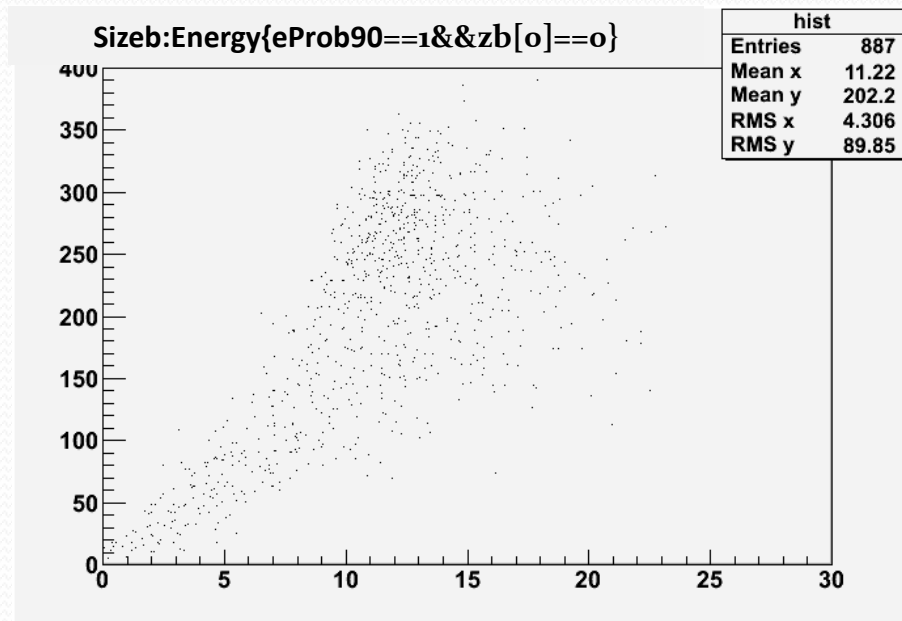
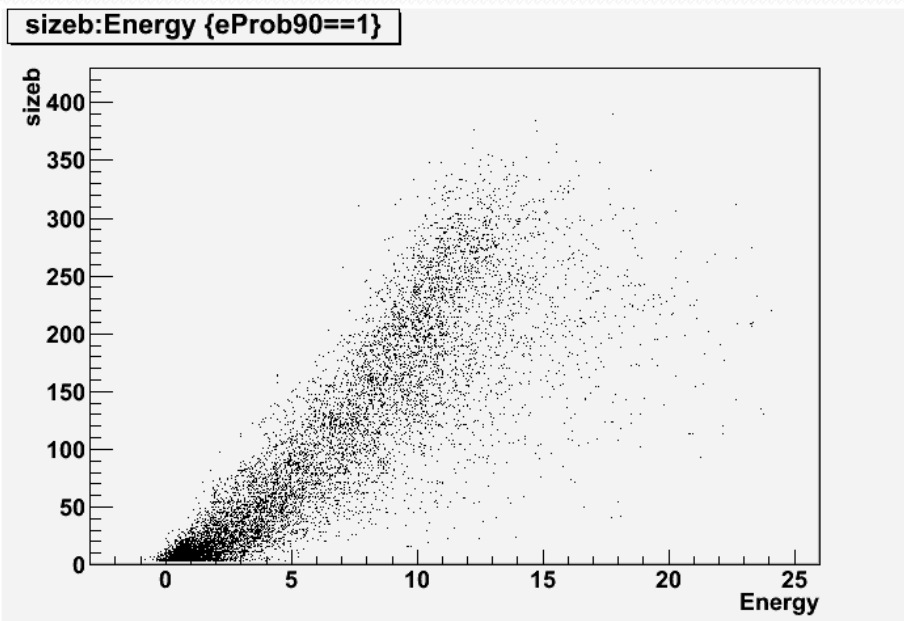
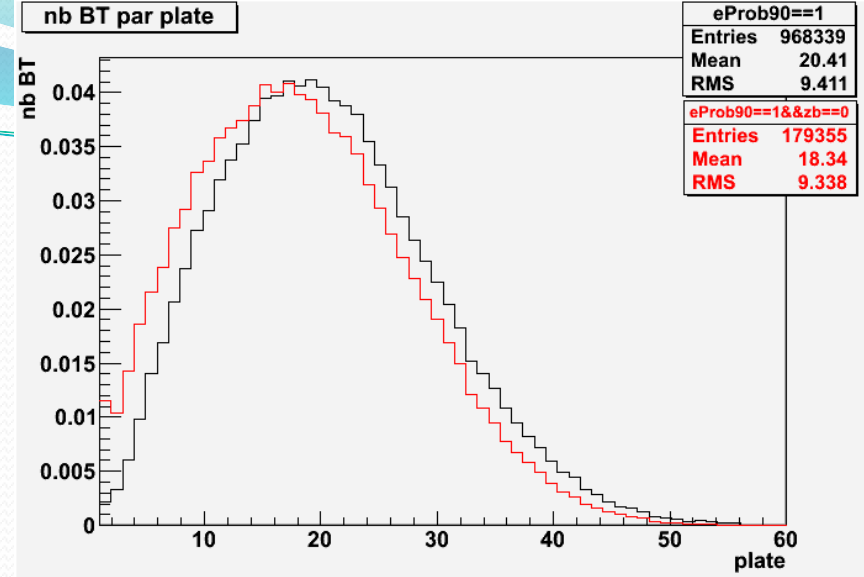
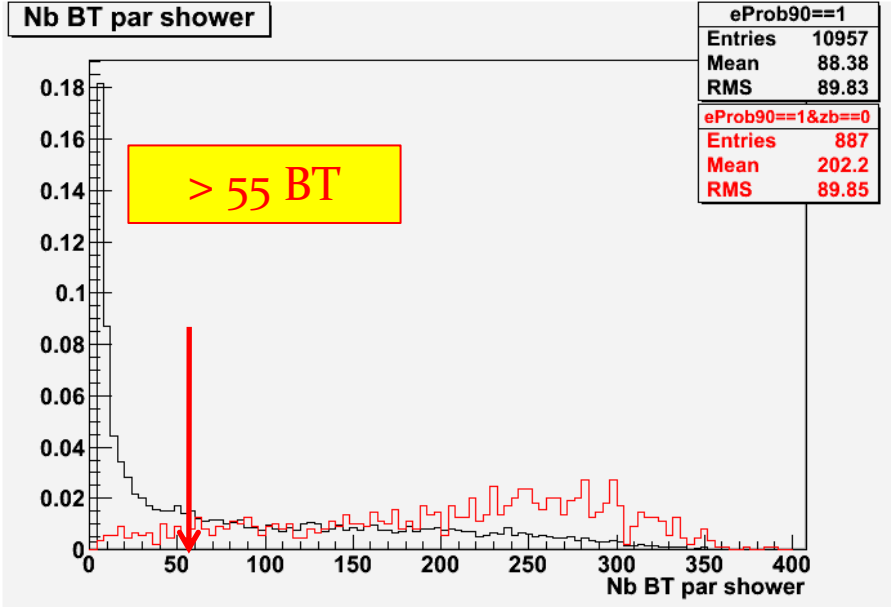
- A base de réseau de neurones root
- Variables d'entrée :
 - 1 variable $\rightarrow$ nombre de BT
 - n variables $\rightarrow$ profil longitudinal = nb BT par film

# films	15	20	30	50
n	13	18	33	48
plage bins	3 à 15	3 à 20	3 à 35	3 à 50

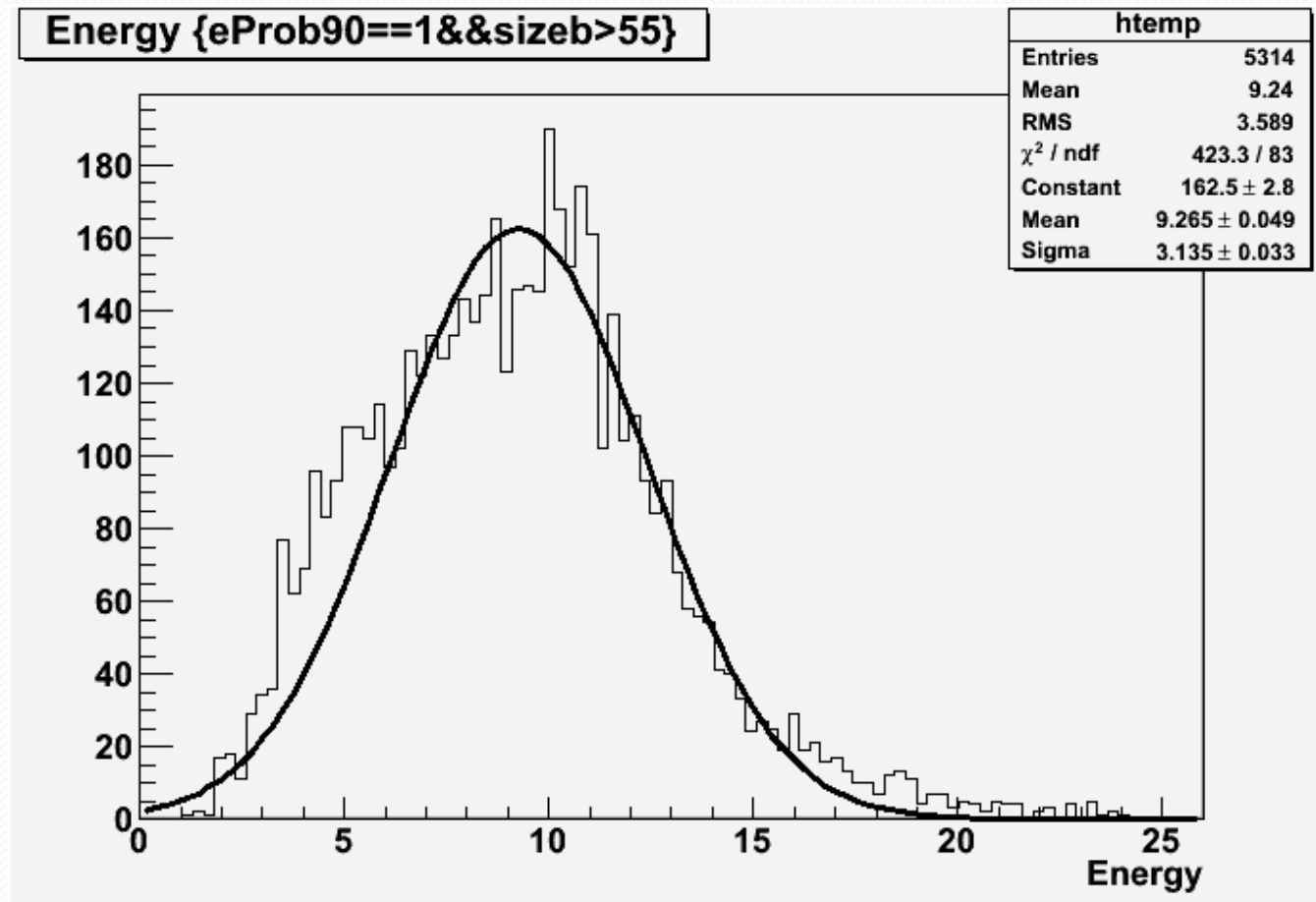
- 2 variables $\rightarrow$ distribution du δr (moyenne et RMS)
 - 2 variables $\rightarrow$ distribution du $\delta \theta$ (moyenne et RMS)
- Variable de sortie : 1 neurone de sortie

Comparaison (gerbes e^- en $z=0$)/(toutes les gerbes e^-)





Energie des gerbes après sélection par nombre de BT par gerbe > 55

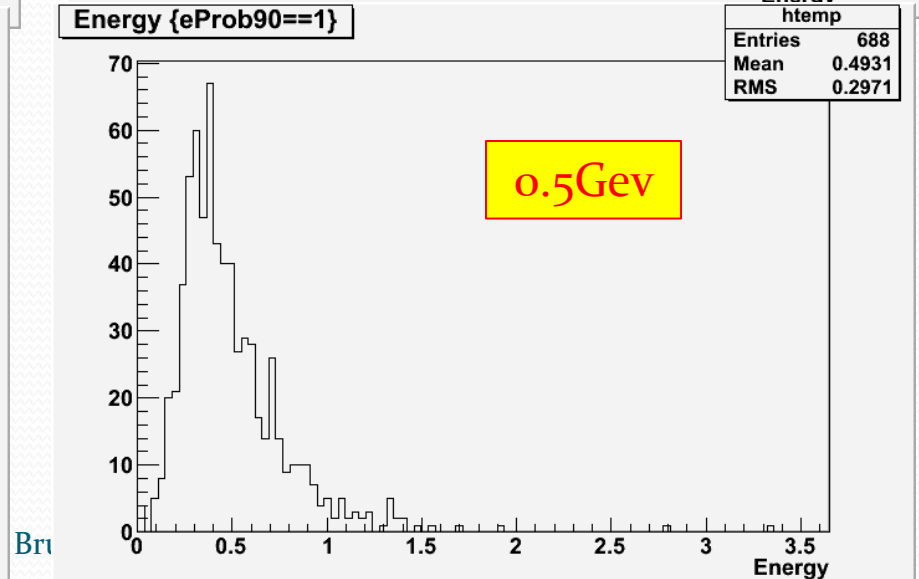
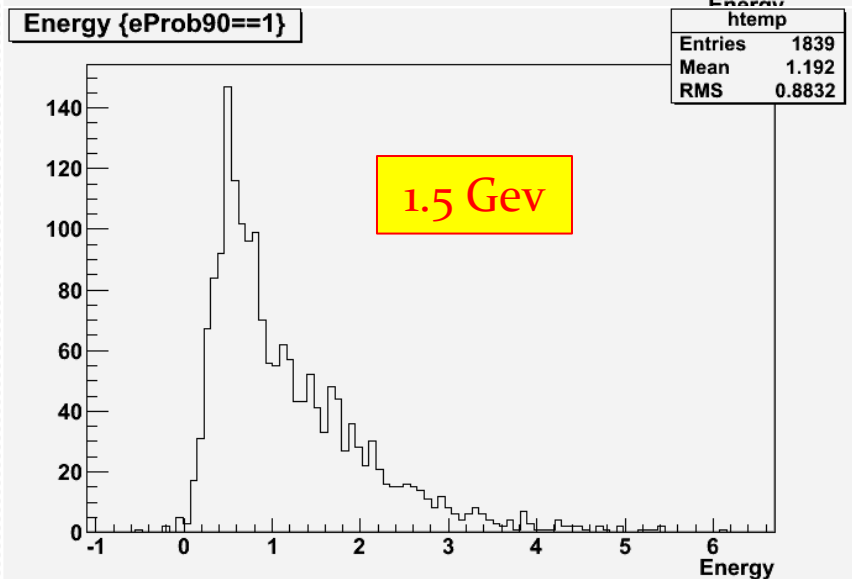
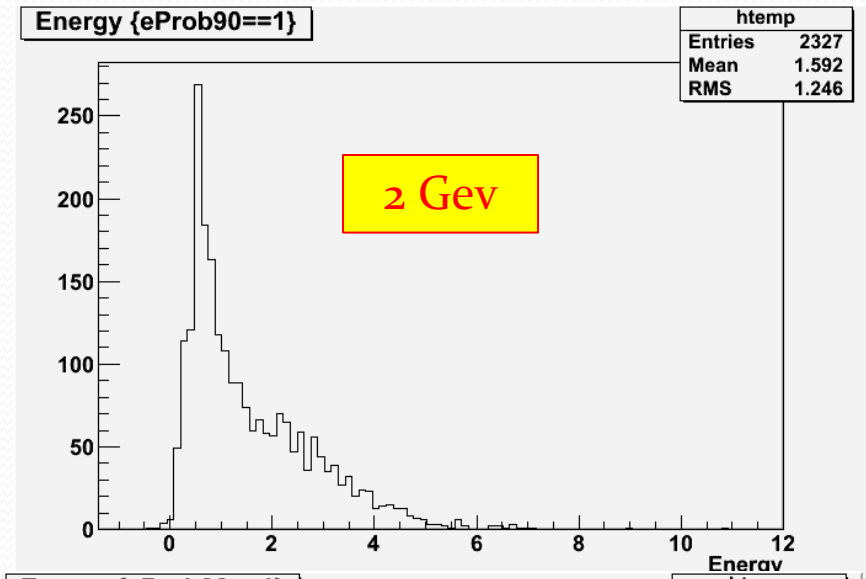
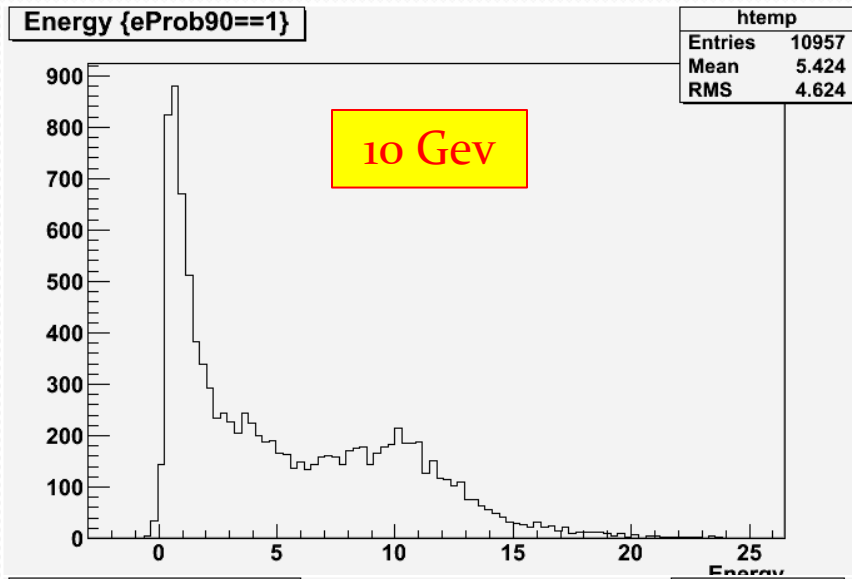


A venir

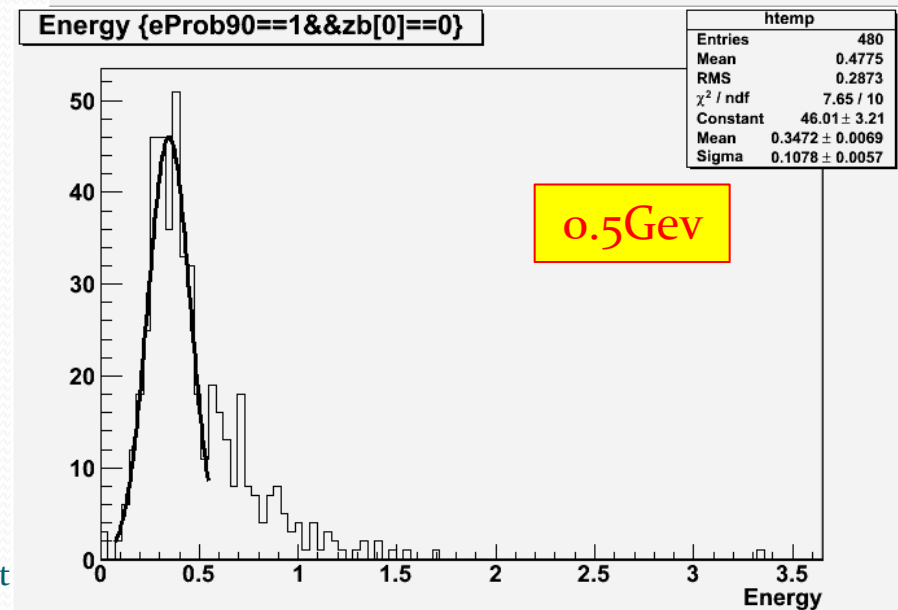
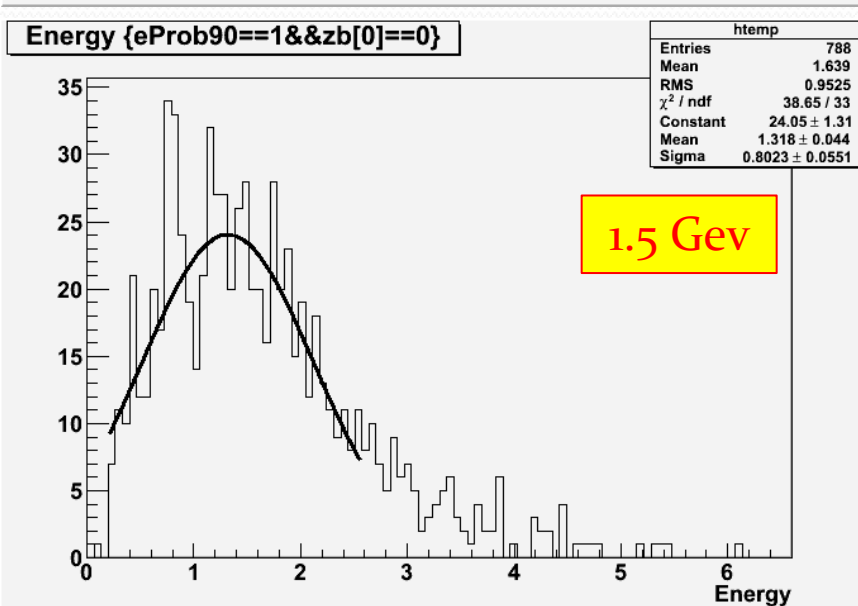
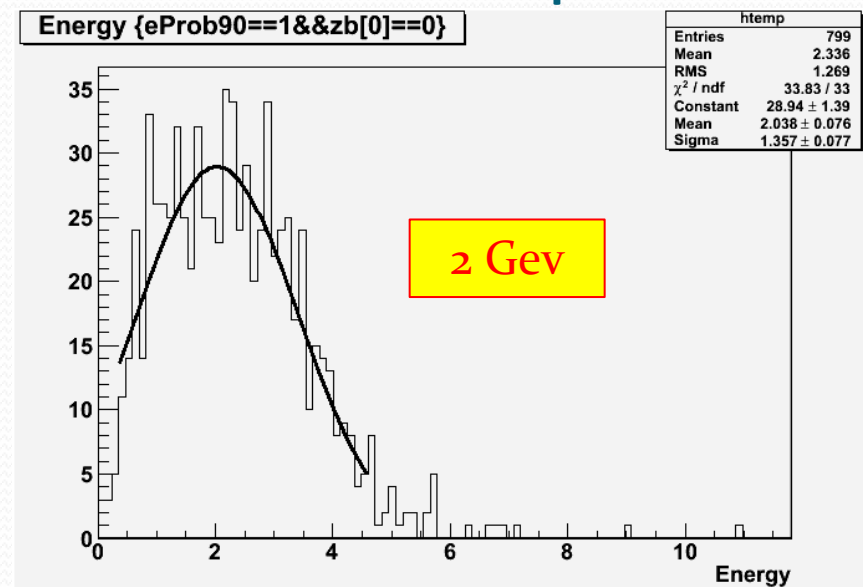
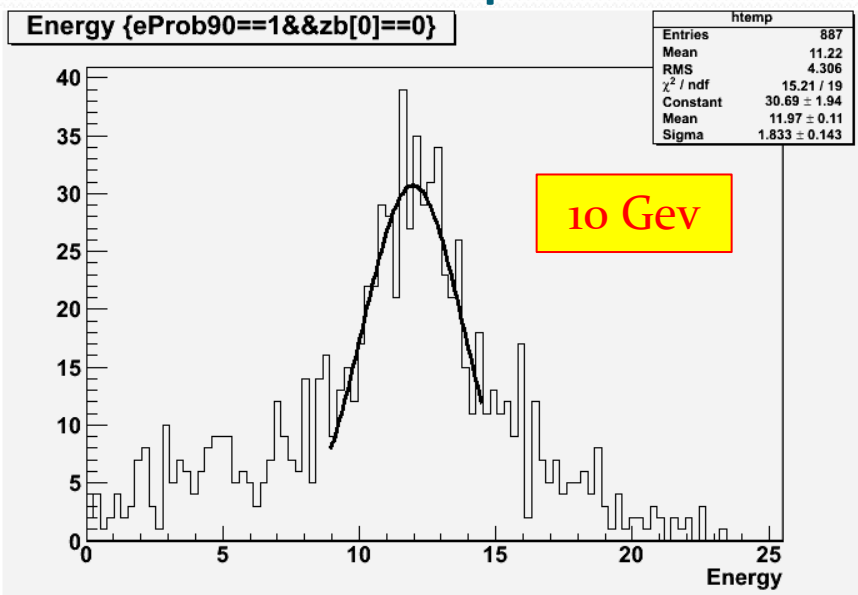
- Différences BT Fedra/Sysal → coupure angulaire? (Valeri)
- Outil de reconstruction de gerbe : critères pour s'affranchir des BT de basse énergie
- Etude sur les gammas de basse énergie
 - Création d'un nouvel outil pour reconstruire efficacement les gerbes gamma et électron et leur énergie dans la gamme $[0.5 : 1.5]$ GeV

Backup slides

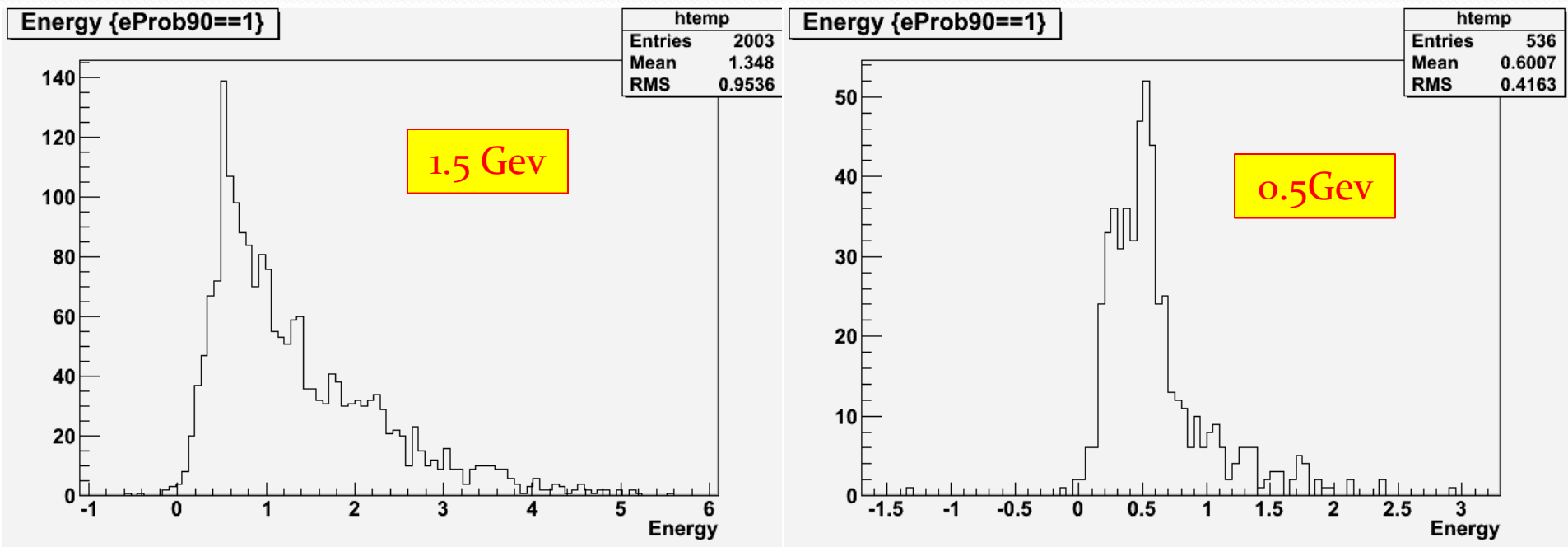
Reconstruction gerbes em issues de 1000 électrons : probabilité 90%



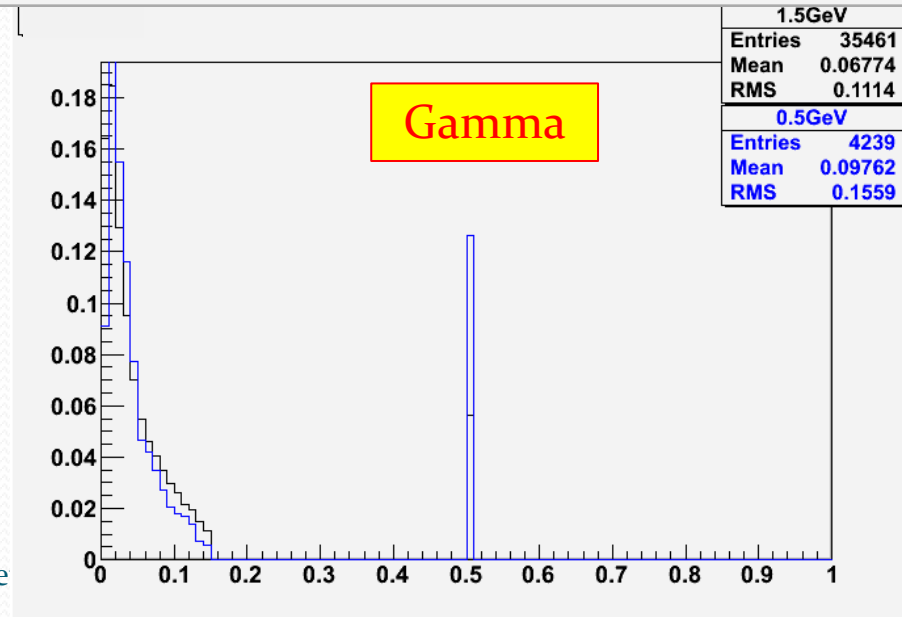
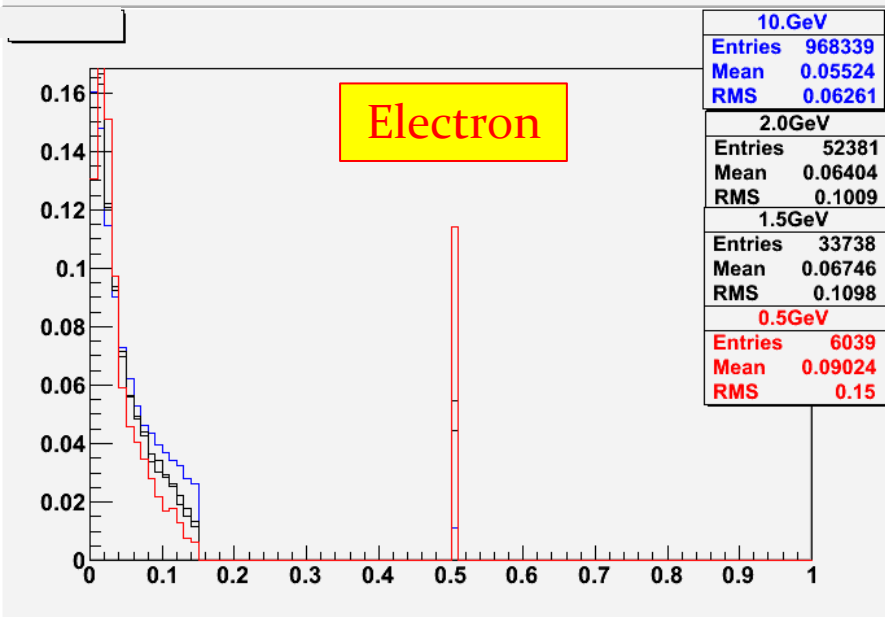
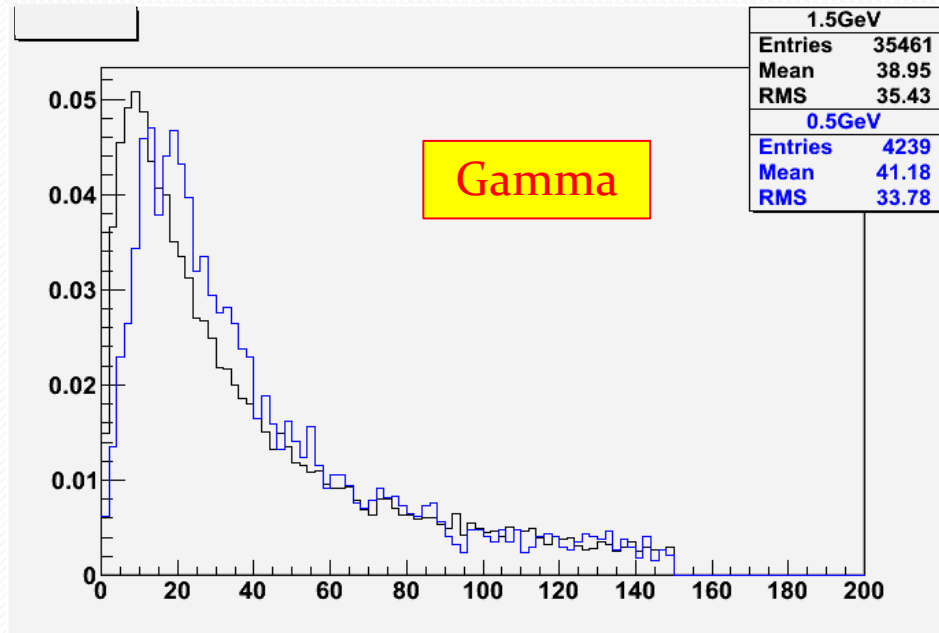
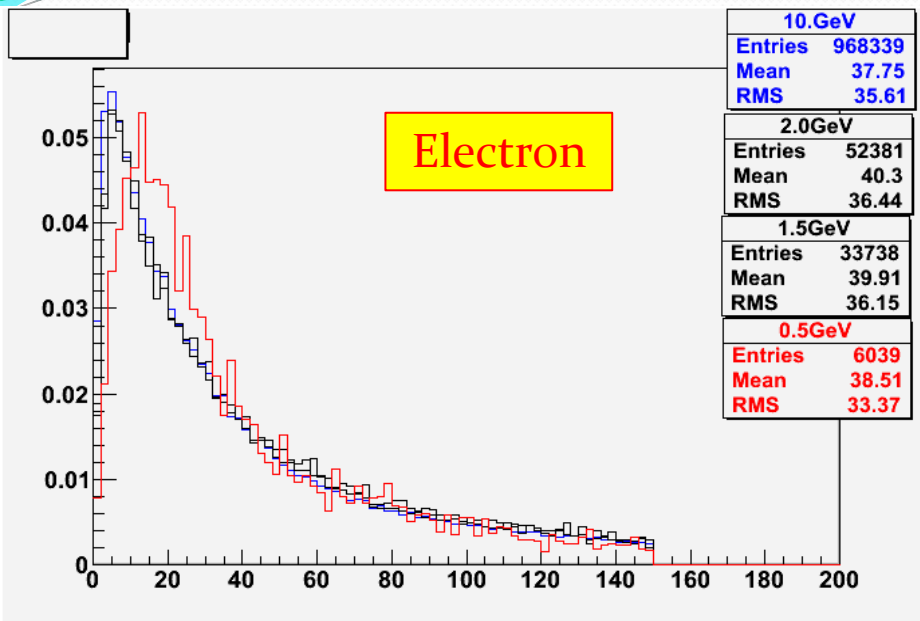
Reconstruction gerbes em issues de 1000 électrons : proba 90% & 1ere BT dans 1ere plate



Reconstruction gerbes em issues de 1000 gamma : probabilité 90%

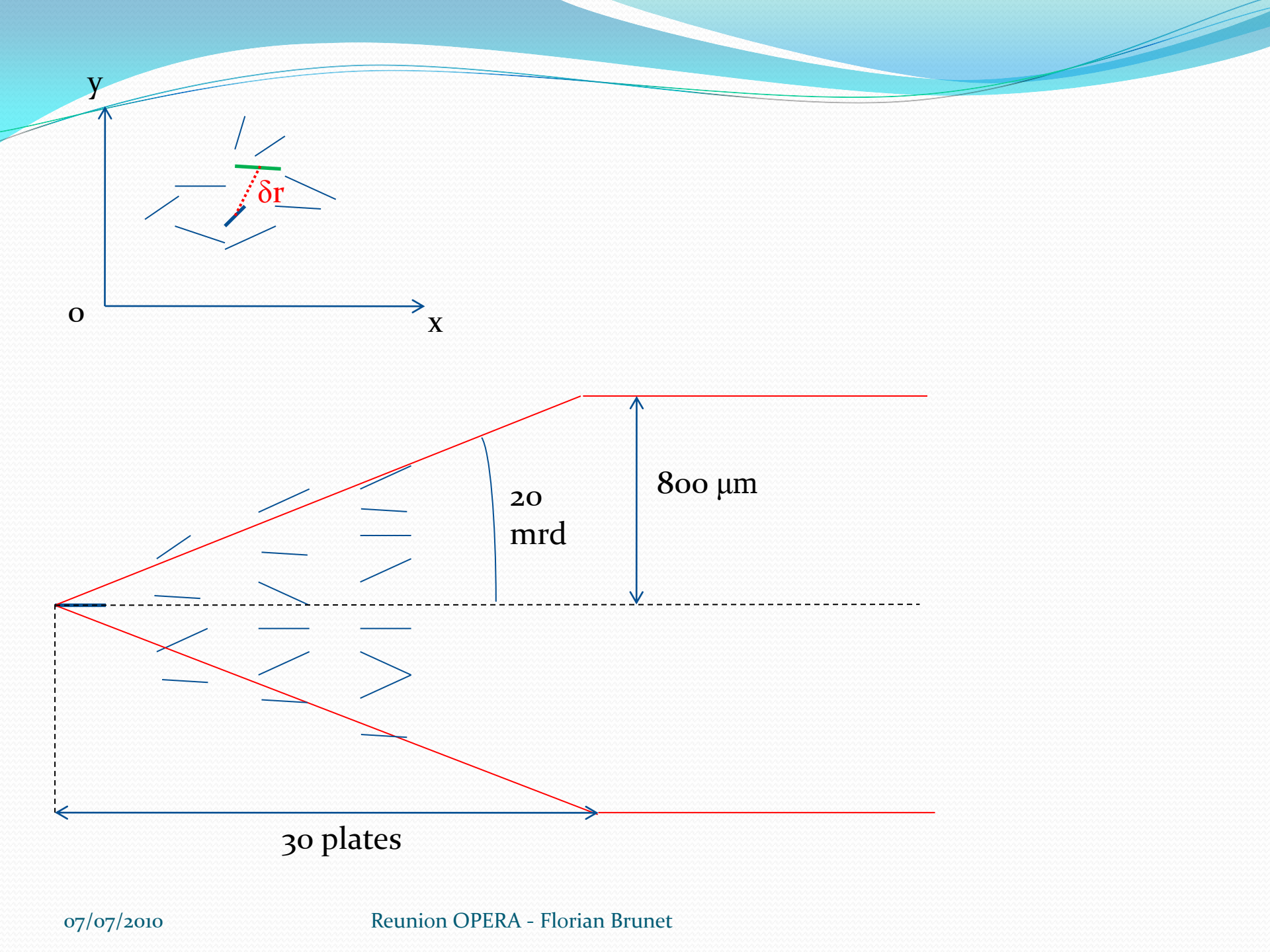


Variables de diffusion : δr & $\delta\theta$

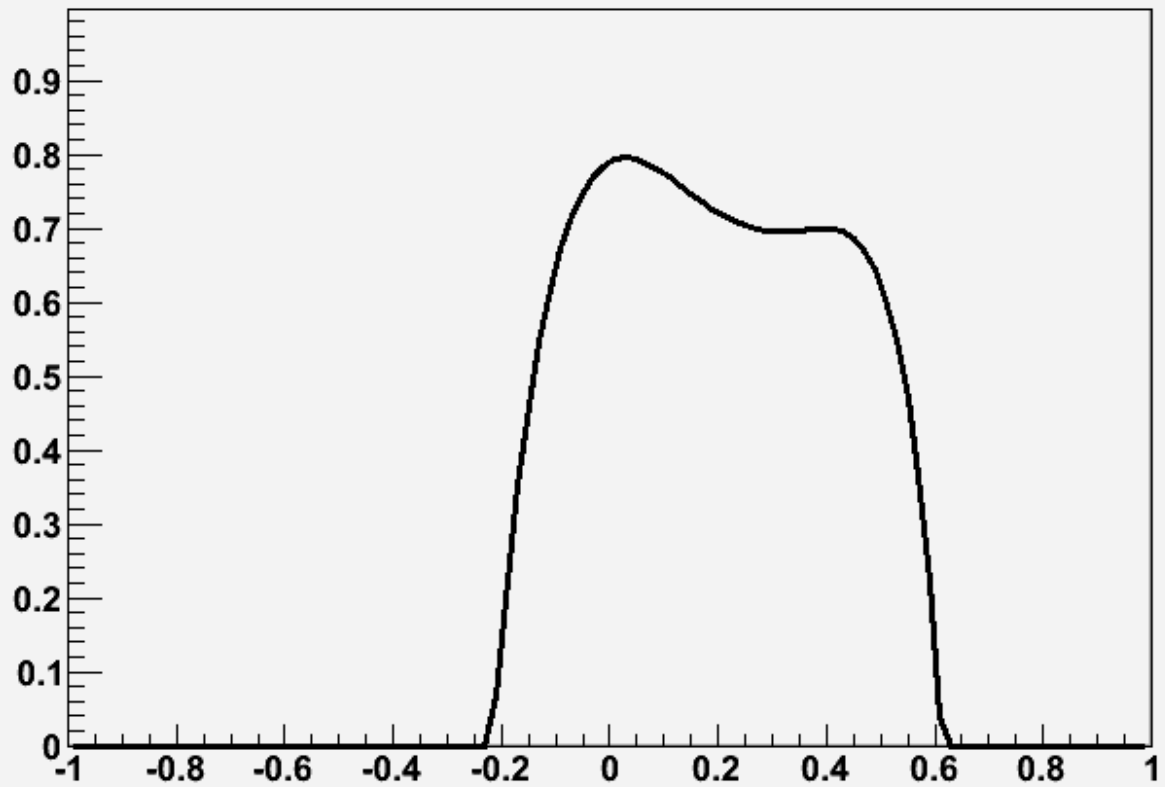


Algorithme de reconstruction de gerbe em

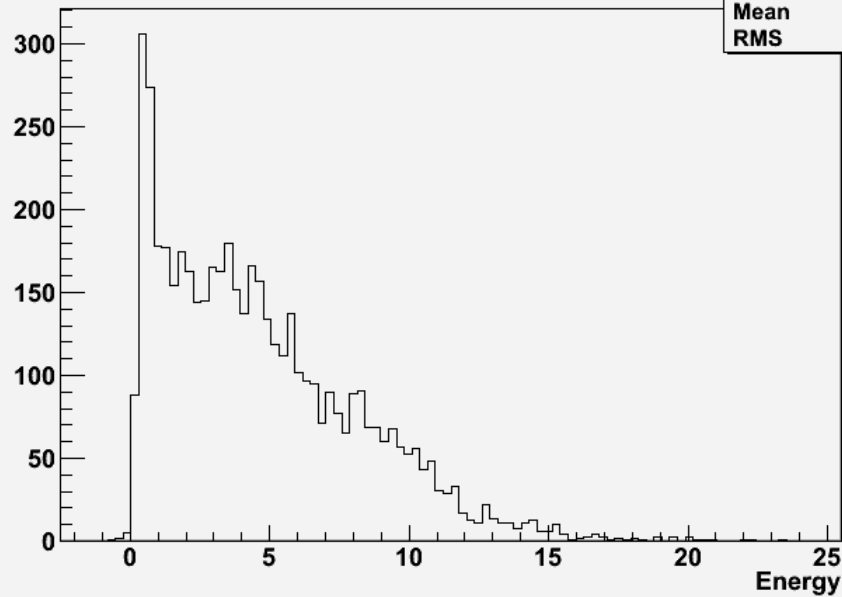
- Pour chaque basetrace recherche de BT correspondantes sur critères angulaires et spatiaux formant la gerbe
 - BT downstream /à la BT de référence
 - $\delta r < 150$ microns, $\delta r = r(\text{BT}) - r(\text{BT}_{\text{ref}})$ = distance dans le plan transverse
 - $\delta\theta < 150$ mrad, $\delta\theta_{3D} = \theta_{3D}(\text{BT}) - \theta_{3D}(\text{BT}_{\text{ref}})$
 - BT soit dans un cône défini par la BT de référence
 - Gerbe se développe sur au moins 4 émulsions



$$0.79 + 0.38 \tan(x) - 7.63 \tan(x) \tan(x) + 25.13 \tan(x)^3 - 24.6 \tan(x)^4$$



Energy {eProb90==1}



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