

# Réunion OPERA

## 5 novembre 2010

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- Rappels
- Test outil de reconstruction de gerbe em :
  - Electrons & Gammas : récapitulatif
  - Efficacites de tracebase & scanning : OpEmuRec + Bern
- A venir

# Rappels

- OpRelease 3.2 SL4/5 : OpSim – OpDigit – OpEmuIO – OpEmuRec (Link, Track, Shower)
- Simulation : électrons & gammas  $\rightarrow$  10,6, 4 & 1.5 GeV  
interagissant avant la brique & aleatoirement
- Validation de l'outil de reconstruction des gerbes dans OpEmuRec et résultats à basse énergie

# Electrons Front : 10, 6, 4, 1.5, 0.5 GeV

| MC Energy     | EnergyMean | EnergyRMS  | # BT mean | # BT RMS   |
|---------------|------------|------------|-----------|------------|
| 10 GeV        | 11.7       | 2.4 (20%)  | 290.9     | 57.4 (20%) |
| 6 GeV         | 7.4        | 2.2 (30%)  | 147       | 44 (31%)   |
| 4 GeV         | 4.9        | 2.1 (43%)  | 85        | 34 (40%)   |
| 4 GeV « F&F » | 4.1        | 1.4 (34%)  |           |            |
| 1.5 GeV       | 1.4        | 0.9 (65%)  | 24.6      | 13.3 (54%) |
| 0.5 GeV       | 0.44       | 0.26 (60%) | 9.0       | 4.3 (48%)  |

# Electrons Front : 10, 6, 4, 1.5, 0.5 GeV

| MC Energy | Mean $\delta\theta$<br>Mean | Mean $\delta\theta$<br>RMS | Mean $\delta r$<br>Mean | Mean $\delta r$<br>RMS |
|-----------|-----------------------------|----------------------------|-------------------------|------------------------|
| 10 GeV    | 0.055                       | 0.005                      | 41.1                    | 4.6 (11%)              |
| 6 GeV     | 0.055                       | 0.008 (11%)                | 42.7                    | 6.9 (16%)              |
| 4 GeV     | 0.056                       | 0.011(20%)                 | 43.6                    | 7.8 (18%)              |
| 1.5 GeV   | 0.069                       | 0.020 (29%)                | 49.3                    | 14.4 (29%)             |
| 0.5 GeV   | 0.097                       | 0.021 (22%)                | 60.6                    | 15.5 (26%)             |

# Electrons Front : 10, 6, 4, 1.5, 0.5 GeV

| MC Energy | RMS<br>$\delta\theta$ Mean | RMS<br>$\delta\theta$ RMS | RMS<br>$\delta r$ Mean | RMS<br>$\delta r$ RMS |
|-----------|----------------------------|---------------------------|------------------------|-----------------------|
| 10 GeV    | 0.035                      | 0.023 (66%)               | 34.3                   | 27.7 (81%)            |
| 6 GeV     | 0.037                      | 0.025 (68%)               | 33.4                   | 25.7 (77%)            |
| 4 GeV     | 0.035                      | 0.024(69%)                | 32.1                   | 26.0 (81%)            |
| 1.5 GeV   | 0.040                      | 0.028 (70%)               | 32.1                   | 23.4 (73%)            |
| 0.5 GeV   | 0.057                      | 0.034 (59%)               | 38.7                   | 22.8 (59%)            |

# Gamma Front : 6, 4, 1.5, 0.5 GeV

| MC energy | Mean Energy | RMS Energy | Mean #BT | RMS #BT    |
|-----------|-------------|------------|----------|------------|
| 6 GeV     | 6.9         | 2.2 (32%)  | 134.5    | 46.6 (35%) |
| 4 GeV     | 4.4         | 1.9 (43%)  | 73.7     | 32.6 (44%) |
| 1.5 GeV   | 1.2         | 0.8 (67%)  | 19.9     | 10.7 (54%) |
| 0.5 GeV   | 0.64        | 0.55 (85%) | 7.5      | 3.2 (43%)  |

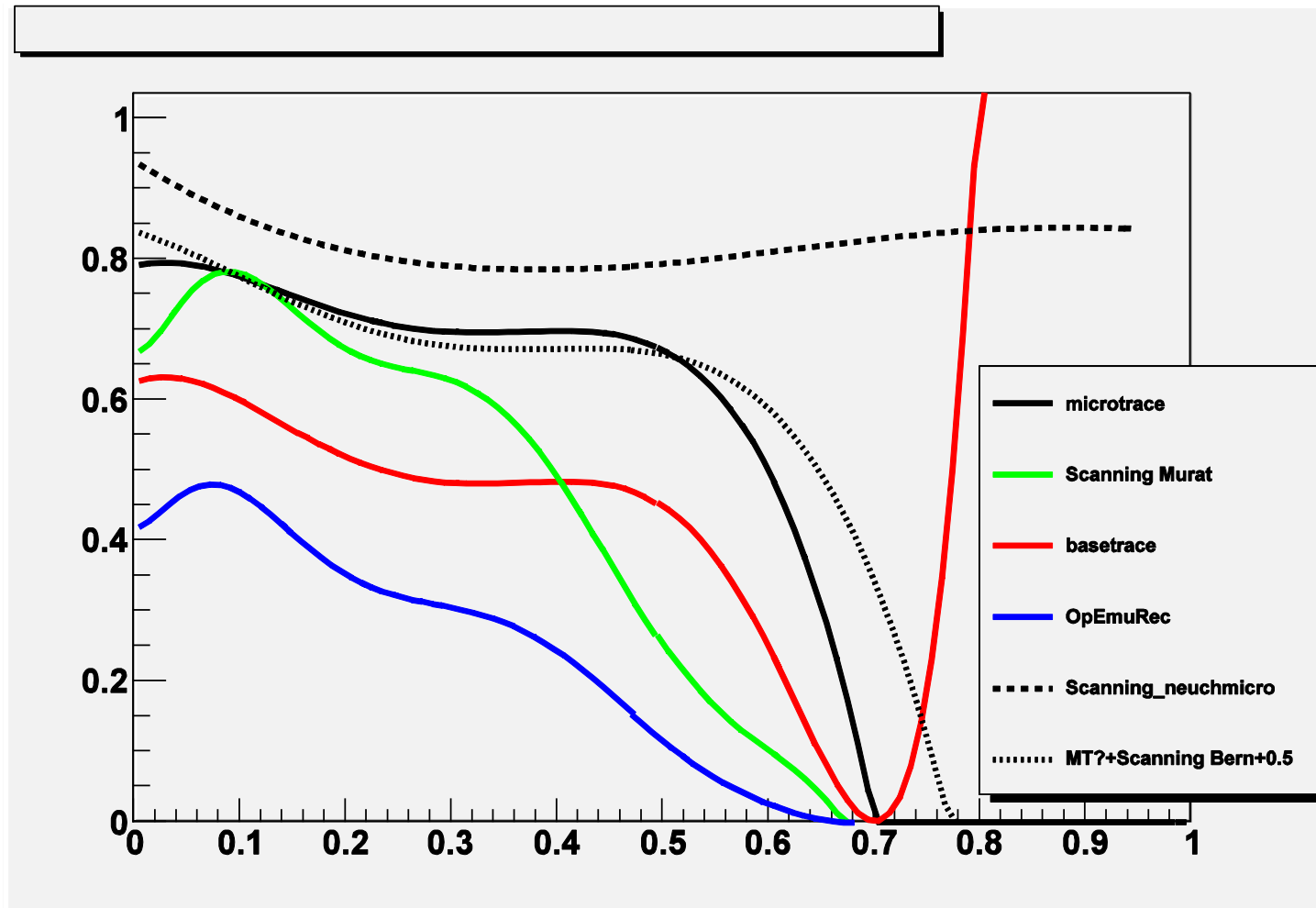
# GammaFront : 6, 4, 1.5, 0.5 GeV

| MC Energy | Mean $\delta\theta$<br>Mean | Mean $\delta\theta$<br>RMS | Mean $\delta r$<br>Mean | Mean $\delta r$<br>RMS |
|-----------|-----------------------------|----------------------------|-------------------------|------------------------|
| 6 GeV     | 0.056                       | 0.011 (20%)                | 43.0                    | 6.9 (16%)              |
| 4 GeV     | 0.058                       | 0.011(19%)                 | 44.0                    | 8.1 (18%)              |
| 1.5 GeV   | 0.073                       | 0.021 (29%)                | 52.2                    | 14.8 (28%)             |
| 0.5 GeV   | 0.11                        | 0.023 (21%)                | 69.7                    | 20.1 (29%)             |

# Gamma Front : 6, 4, 1.5, 0.5 GeV

| MC Energy | RMS<br>$\delta\theta$ Mean | RMS<br>$\delta\theta$ RMS | RMS<br>$\delta r$ Mean | RMS<br>$\delta r$ RMS |
|-----------|----------------------------|---------------------------|------------------------|-----------------------|
| 6 GeV     | 0.037                      | 0.024 (65%)               | 35.0                   | 27.0 (77%)            |
| 4 GeV     | 0.035                      | 0.023(66%)                | 31.0                   | 24.6 (79%)            |
| 1.5 GeV   | 0.042                      | 0.028 (67%)               | 34.8                   | 24.4 (70%)            |
| 0.5 GeV   | 0.065                      | 0.036 (55%)               | 38.9                   | 25.1 (65%)            |

## Efficacites de tracebase & scanning : OpEmuRec + Bern



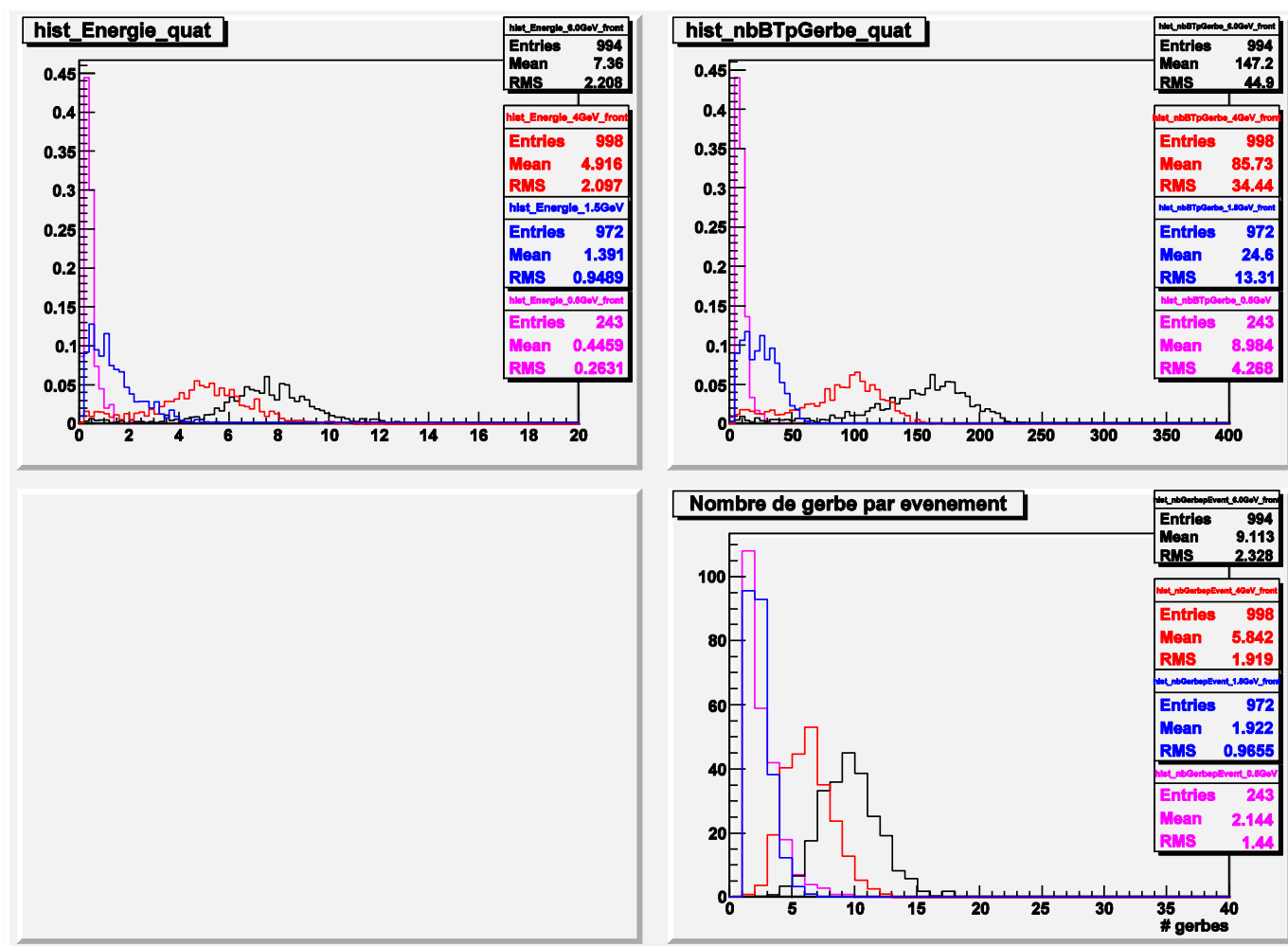
# A venir

- Réunion OpEmuRec à Bern (9/11/2010)
- JJC (21 – 27/11/10)
- Séminaire de fin de première année (06/01/2011)
  
- Reconstruction de gerbes « RANDOM » → debugging
- Reconstruction de gerbes à basse énergie
  - Electron : 1.5 & 0.5 GeV
  - Gamma : 1.5 & 0.5 GeV
- Test nouvelle release de Fedra Shower Rec
- Outil de reconstruction des gerbes gamma de faible énergie
  - Création de l'outil
  - Tests sur les échantillons MC
  - Tests sur les données du test faisceau pion → 90% d'électrons à 1 GeV

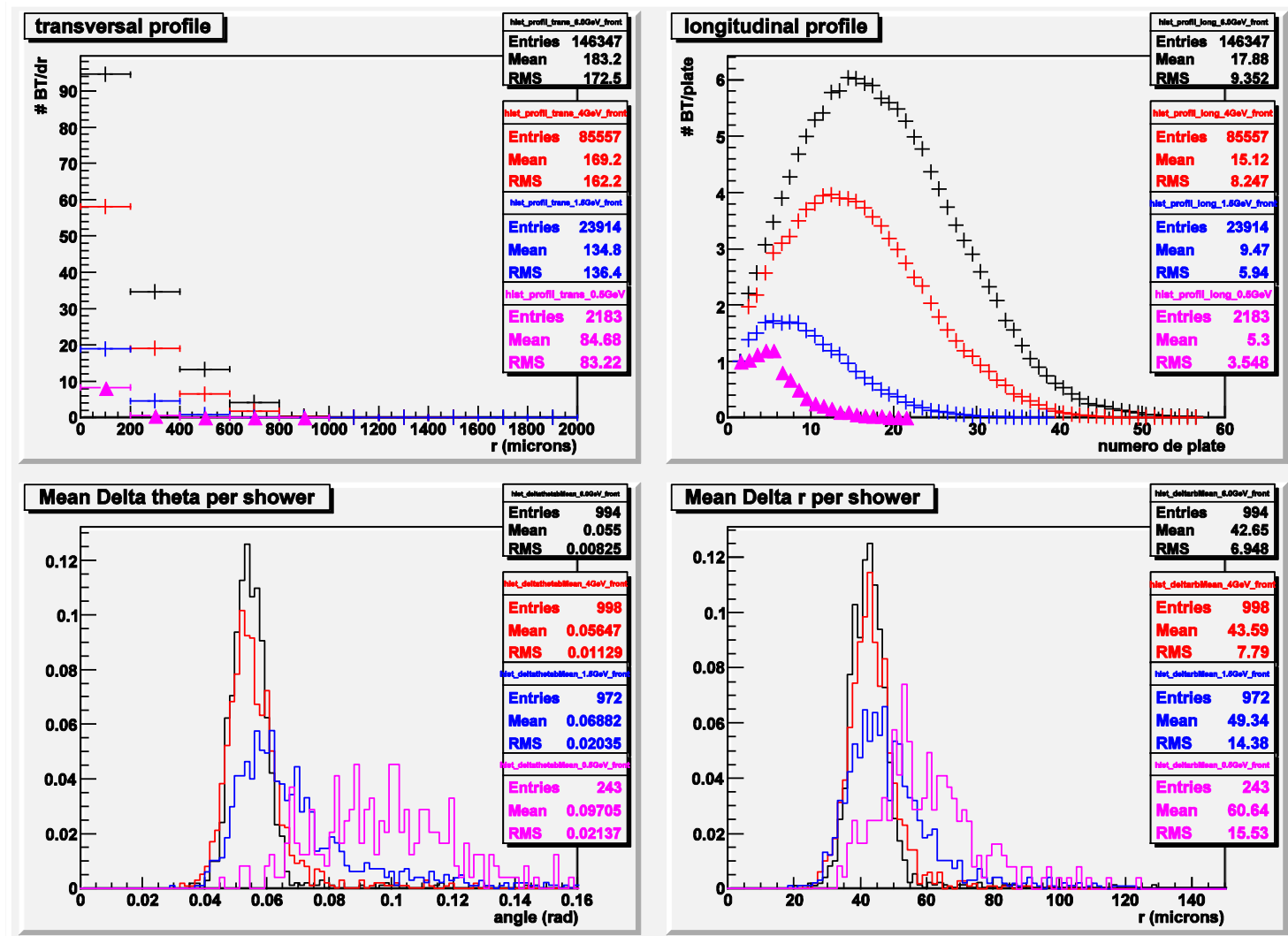
# Backup slides

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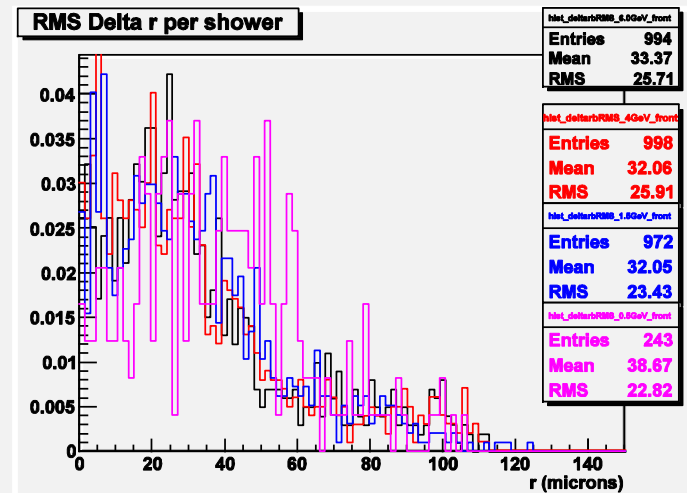
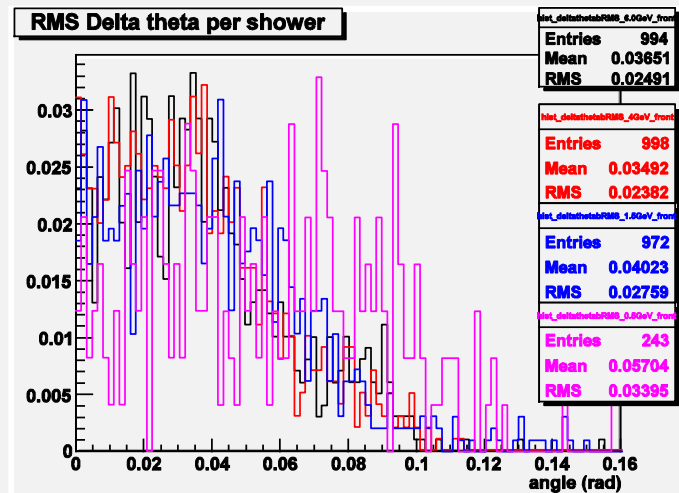
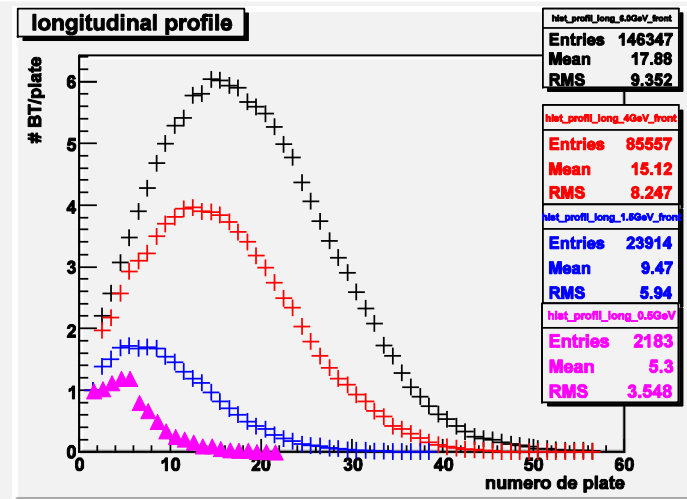
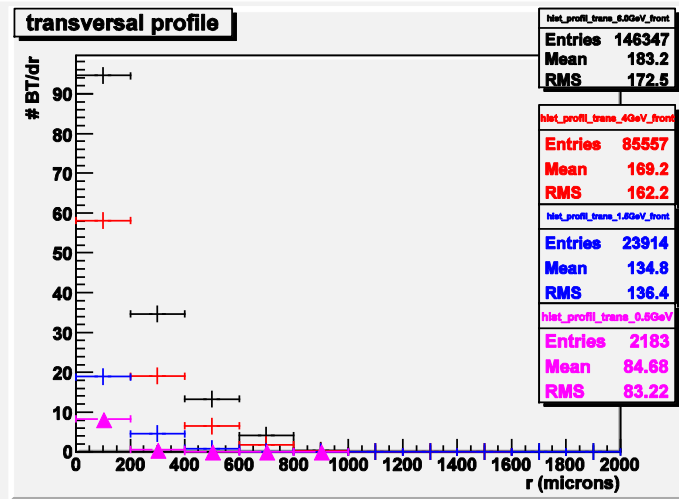
# Electrons Front : 6, 4, 1.5, 0.5 GeV



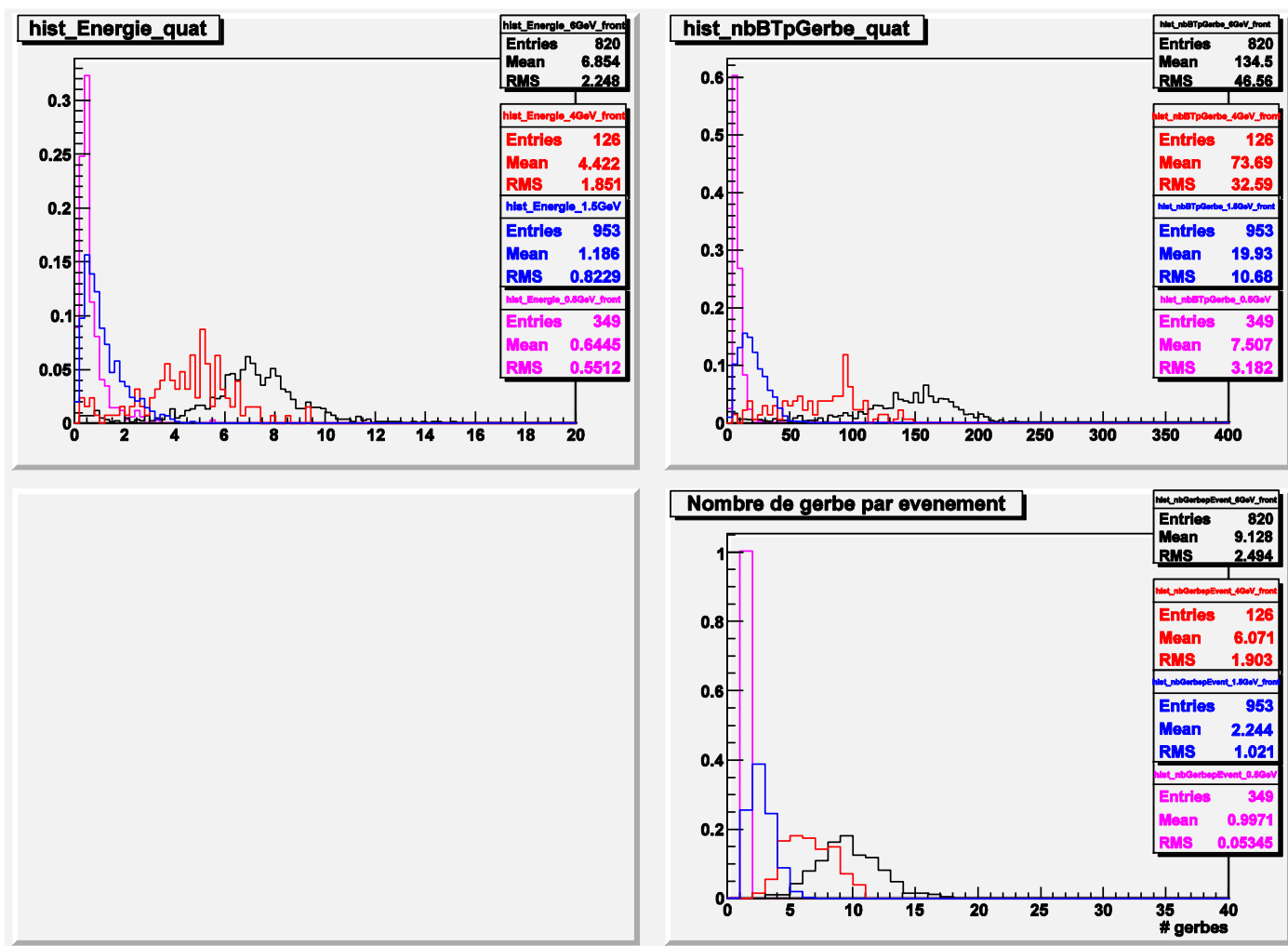
# Electrons Front : 6, 4, 1.5 & 0.5 GeV



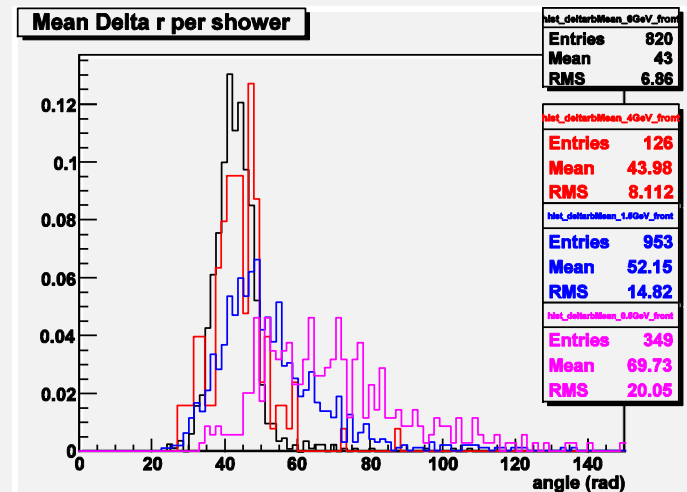
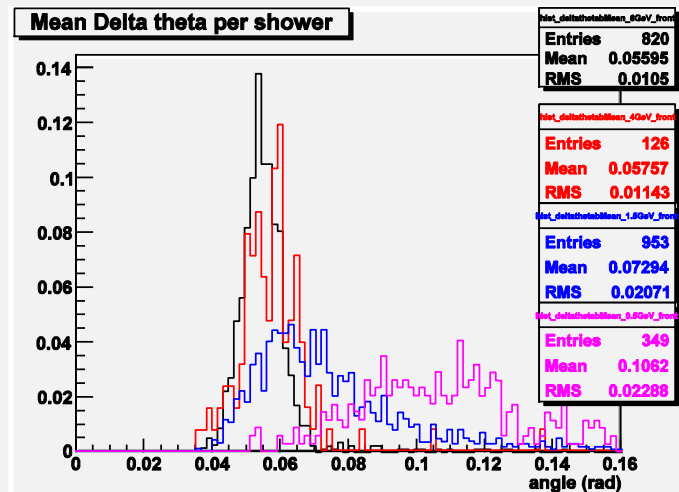
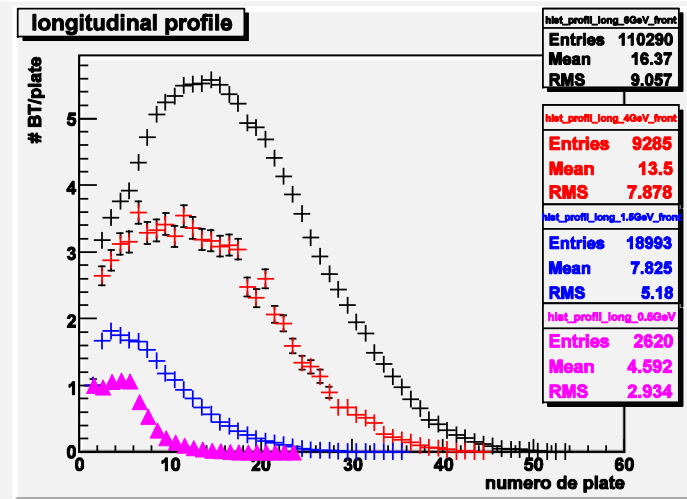
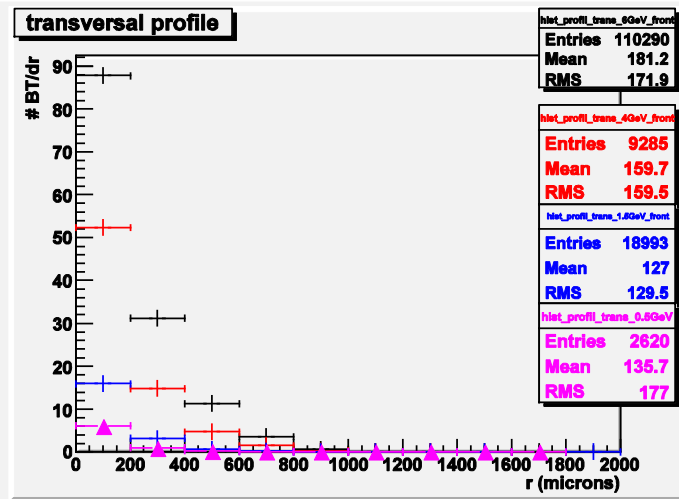
# Electrons Front :6, 4, 1.5 & 0.5 GeV



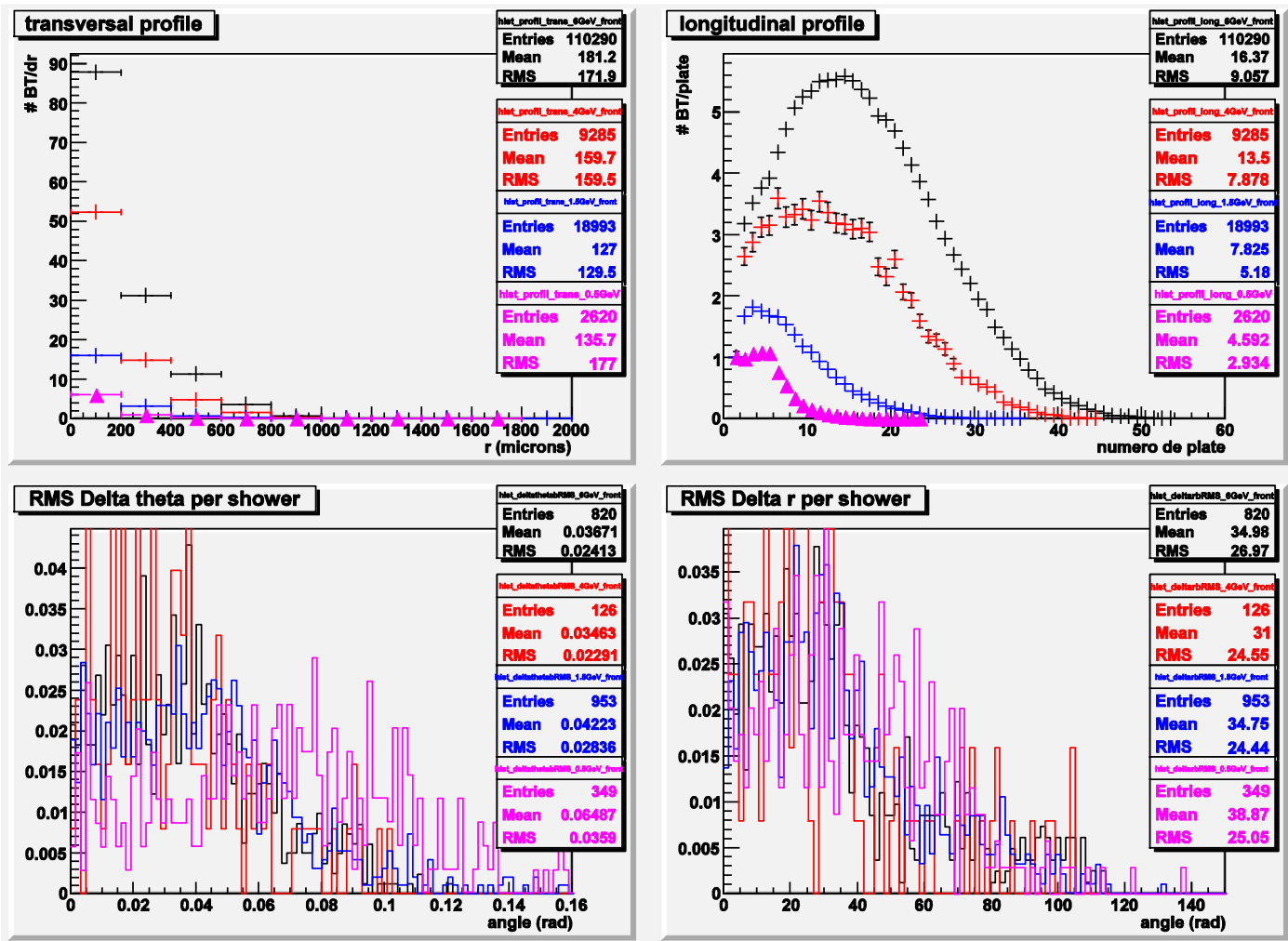
# Gamma Front : 6, 4, 1.5 & 0.5 GeV



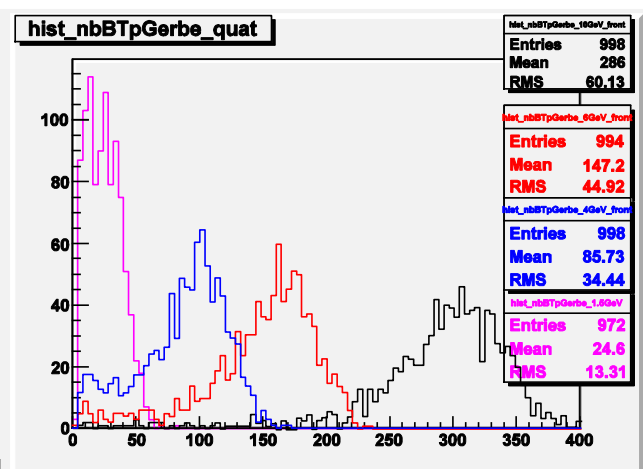
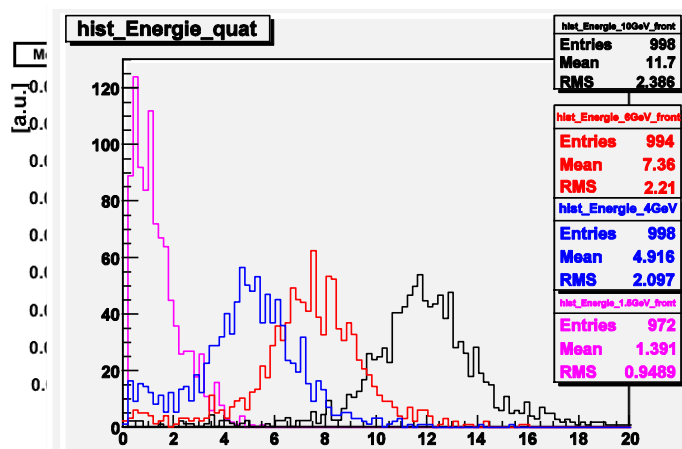
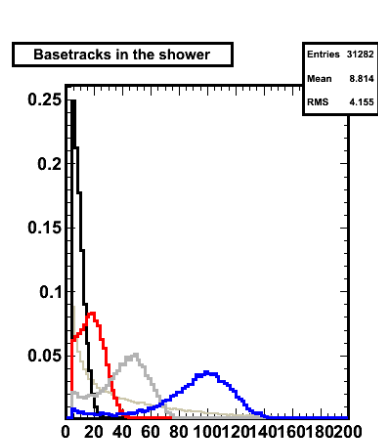
# Gamma Front : 6, 4, 1.5 & 0.5 GeV



# Gamma Front : 6, 4, 1.5 & 0.5 GeV



# Electrons Front : 10, 6, 4, 1.5 GeV



4GeV: 100, 85, 75, 65 percent scann Eff.

