STATUS OF COSMIC ANALYSIS

ES

Tracker Workshop, 15 Dec 2011
OVERVIEW

1. General Comments
2. Light Yield
3. Pending Issues
4. Requests for the Future Runs
1 - GENERAL COMMENTS

- Although feasible, it’s hard to merge all data since the 23rd September on the same analysis
  
  - different run modes
    
    - single tracker runs;
    
    - spill gate variations;
    
    - lead was moved around.
1 - GENERAL COMMENTS

- Overall, the data quality improved along the run.
- Main result is: the ratio noise:signal came down from a level of 6:1 (!?) to something more comprehensible (see the following; corresponds to this week’s run 1851 - the state of the art.)
1 - GENERAL COMMENTS

![Histogram of number of hits in tracker 0 per trigger.](image)

- **Entries:** 38098
- **Mean:** 15.13
- **RMS:** 4.753
- **Underflow:** 0
- **Overflow:** 980
- **Integral:** $2.098 \times 10^4$

![Histogram of number of hits in tracker 1 per trigger.](image)

- **Entries:** 38098
- **Mean:** 0.6786
- **RMS:** 0.5571
- **Integral:** $2.994 \times 10^4$

Thursday, 15 December 2011
1 - GENERAL COMMENTS

✧ Run 1851:

✧ 8 days long;
✧ 1.2 Gb of raw data;
✧ 15019 spills recorded;
✧ 4 spills discarded (bank lengths were not the same);
✧ ~14 000 tracks in tracker 0
✧ ~6500 tracks in tracker 1
1 - GENERAL COMMENTS

- Bad channel list consists of 6 channels

<table>
<thead>
<tr>
<th>board</th>
<th>bank</th>
<th>channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>102</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>125</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
1 - GENERAL COMMENTS

❖ Run your own analysis:

❖ bzr pull lp:e-santoss0/maus/cosmics

❖ Instructions online.
Cuts:

- zero suppression: $\text{adc} > 60$
- $\text{npe} > 2$
- only accept digits that belong to \text{triplets}
- exclude overflow ($\text{adc} \neq 255$)
2 - LIGHT YIELD

![Histograms showing light yield in tracker 0 and tracker 1.](image)

- **Tracker 0, npe**
  - **Entries**: 286083
  - **Mean**: $10.31 \pm 0.008903$
  - **RMS**: $4.757 \pm 0.006295$
  - **Underflow**: 0
  - **Overflow**: 550

- **Tracker 1, npe**
  - **Entries**: 67743
  - **Mean**: $9.795 \pm 0.01594$
  - **RMS**: $4.147 \pm 0.01127$
  - **Underflow**: 0
  - **Overflow**: 74
... besides the light yield...

- Discriminators are off

- Event numbers start from 1 (easy to solve during the unpacking - but do we want to keep it like this?)

- TDC calibration?
4 - REQUESTS FOR FUTURE RUNS

- Correct 180° connector flips (simplifies the work on the mapping).
- Change Equipment List - this will change the raw data structure. We should run the same unpacking code we will be running in MICE.