First look at MIPs in E2E

• This is a first attempt to a simple analysis looking at one tower data (E2E test)
  – We have analyzed some different runs with different external trigger rate
  – We have made a selection on CAL variable
  – We have looked at some TKR variables comparing baseline and high rate runs
### Comparison of the baseline and high rates runs

**Number of Events with different Trigger conditions**

<table>
<thead>
<tr>
<th>Run Number</th>
<th>Run Type</th>
<th>Events No Cuts</th>
<th>TKR TRIGGER GemConditionsWord==2</th>
<th>TKR &amp;&amp; EXT TRIGGER GemConditionsWord==130</th>
</tr>
</thead>
<tbody>
<tr>
<td>135000894</td>
<td>Baseline</td>
<td>156761</td>
<td>155105</td>
<td>-----</td>
</tr>
<tr>
<td>135000909</td>
<td>1 KHz</td>
<td>191588</td>
<td>150213</td>
<td>94</td>
</tr>
<tr>
<td>135000911</td>
<td>5 KHz</td>
<td>172201</td>
<td>134926</td>
<td>508</td>
</tr>
<tr>
<td>135000915</td>
<td>10 KHz</td>
<td>154559</td>
<td>121027</td>
<td>1111</td>
</tr>
<tr>
<td>135000931</td>
<td>20 KHz</td>
<td>126848</td>
<td>98579</td>
<td>2319</td>
</tr>
</tbody>
</table>
Cut on a CAL to Select a MIP

- We have started looking at few TKR distributions for events with the merit variable CalMIPRatio.

\[ 0.6 < \text{CalMIPRatio} < 1.3 \]
Total number of TKR clusters (TRK TRIGGER)

Cuts:
0.6 < CalMIPRatio < 1.3
GemConditionsWord==2
Total number of TKR clusters (TRK && EXT)

Cuts: $0.6 < \text{CalMIPRatio} < 1.3$ && $\text{GemConditionsWord}==130$

- 135000909
- 135000918
- 135000915
- 135000931
XDir 1st Track

Baseline

135000909 TKR

Cuts:

0.6 < CalMIPRatio < 1.3

135000931 TKR

GemConditionsWord==2

135000909 TKR && EXT

GemConditionsWord==130

135000931 TKR && EXT

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Next Steps

- Repeat the comparison between the same runs checking CAL variables after selections on TKR.

To begin Cuts on:

Numbers of Tracks

- Select 1 track

Numbers of Vertices

- Select 1 vertex