Calibration of AcdPha to Mips Values using AcdRange in the SVAC NTuple

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SVAC Variables and Calibration Files Used

• AcdRange is 604x2 matrix with value 0 or 1
• AcdPha is 604x2 matrix of floats
• Used calibration text files prepared by Eric Charles found at (SLAC Unix path):
  $LATCalibRoot/ACD/GROUND_LAT/SLAC_PHASE_0_B2/allB2_gain.txt
  $LATCalibRoot/ACD/GROUND_LAT/SLAC_PHASE_0_B13/allB13_ped.txt
  – Arrays of length 194 (97 tiles x 2 PMTs) called Peak for peak gain and Ped for pedestal were created
Calibration of AcdPha to Mips

For a given tile, n_tile:

• If AcdRange zero for ONLY 0th PMT, take only:
  \[ \text{Mips}[n\_tile] = \frac{\text{AcdPha}[n\_tile][0]-\text{Ped}[n\_tile][0]}{\text{Peak}[n\_tile][0]-\text{Ped}[n\_tile][0]} \]

• If AcdRange zero for ONLY 1st PMT, analogous formula with 0 replaced by 1.

• If AcdRange zero for both PMTs, then average over both PMTs.

• If for above cases, Mips > 4, Mips := 4.0.

• If AcdRange=1 for both PMTs, then Mips=4.0
• MIPs distributions will be examined for some representative tiles from the top, sides, and ribbons.
Mips Distributions for Top Tiles 0-1

```
<table>
<thead>
<tr>
<th>mips [0]</th>
<th>Entries / bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td></td>
</tr>
</tbody>
</table>

number of entries: 10853
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<table>
<thead>
<tr>
<th>mips [1]</th>
<th>Entries / bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
</tr>
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<td>2.0</td>
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<td>3.0</td>
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</tr>
<tr>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td></td>
</tr>
</tbody>
</table>

number of entries: 14479
Mips Distributions for Top Tiles 0-1

- A cut of > 0.25 has been applied.
Mips Distributions for Side Tiles 214-220

Number of entries: 3639

Number of entries: 3284
• A cut of >0.25 has been applied.
Mips Distributions for Ribbon Tiles 601-2

![Histogram of MIPS distributions for Ribbon Tiles 601-2](image)

- Number of entries for mips[601]: 4256
- Number of entries for mips[602]: 4507
• A cut of > 0.25 has been applied.