Checking the Acd hardware veto setting

The hardware veto is generated in the front-end electronics

- Discriminator with coarse and fine settings
- Both are 6 bit registers (0-63)
- 32 fine counts = 1 coarse count

Multi-step process to configure the veto correctly

- Use charge injection calibration and/or muon data to map veto setting to PHA value
- Use muon data to get MIP peaks in terms of PHA counts
- Combine the two to set the veto as a MIP fraction
  - ie, set the veto to 0.3 mips
Pedestals

- Even with no input signal the PHAs are non-zero
- Use B/13 (ie, non-zero suppressed) run to get pedestals
  - Configuration is chosen to give pedestals at least 100 pha counts

![Pedestal Histogram](image)

<table>
<thead>
<tr>
<th>Pedestals</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Entries</td>
<td>178</td>
</tr>
<tr>
<td>Mean</td>
<td>285.1</td>
</tr>
<tr>
<td>RMS</td>
<td>156.4</td>
</tr>
</tbody>
</table>
Mip peaks

- Select events to be close to normal incidence on ACD
- Subtract pedestals
- Fit for most probable value of MIP distribution
  - HV bias is set so that mip peaks are > 400 counts above pedestal
Veto turn on

Compare all PHA values to those values where the veto is set.
Vetos were set lower than expected

- Compare veto values to MIP peak values
- Find that veto values were about 0.1 MIPs (wanted 0.2)
  - Spread of distribution is fairly large (0.032 MIPs)
  - Should be able to improve this considerably