Energy Scale
Flasher Cut

T2KSK @ SB Meeting

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08/29/2013
Energy Scale

We observed an unusual behavior on Charge profile distribution between Data April 09 and October 11 (pg 31 ES meeting 2013 08 21), we wanted to see cut parameters distributions for same periods to understand if this problem is coming from statistical fluctuations.
Cuts

Angle < 41.7 degrees

Decay time > 1.2 us

200 pe < Total Charge < 5000 pe

Z > 1720 cm

Z direction < -0.87 (cosine)

Goodness > .6
Comparing Apr09 Oct11

Decay Time > .8 (µs)

Arbitrary Units (Normalized to 1)

Total Charge (pe)

Arbitrary Units (Normalized to 1)

dZ1

Arbitrary Units (Normalized to 1)

Goodness
Flasher Cut

μ Events rejected by the flasher cut are really bad events?

μ How many candidate events we are loosing with this cut?

μ We need to estimate the inefficiency of the flasher cut.
Flasher distribution

Basic Cut: Events with Evis > 30 MeV and DWall > 200 cm

Accepted Events: Events below 3

Rejected Events: Events above 3
Flash cut over Nue selection

Our events that were rejected by the flash cut passed over the Nue event selection

Table 1: Number of Events - Energy

<table>
<thead>
<tr>
<th>Beam</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>NuMu</td>
<td>0.07</td>
</tr>
<tr>
<td>NuMubar</td>
<td>0.00</td>
</tr>
<tr>
<td>Nue</td>
<td>0.04</td>
</tr>
<tr>
<td>Nuebar</td>
<td>0.00</td>
</tr>
<tr>
<td>Nuesig</td>
<td>0.15</td>
</tr>
</tbody>
</table>
Flash cut over Nue selection

\[ MC = \text{Numu} + \text{NuMubar} + \text{Nue} + \text{Nuebar} + \text{Nuesig} \]

\[ \text{Inefficiency} = \frac{\text{Events Nue selection and Flasher} > 3}{\text{Events Nue selection}} \]
Comments on Flasher Cut

Shiozawa-san recommended create a table over all flasher cut parameters (Inefficiency, # events, etc).

I have an answer from Kimihiro-san saying there is only one parameter to define Flasher cut rejected events.