Data analysis on Si slab CERN TB

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Outline

- Setup at CERN
- Si & Sc combined result
- summary

Beam Test Setup

- We set up at T9 line in PS(11/26-12/8)
- One Si slab was set in front of Sc ECAL and AHCAL
- We tested Si detector and combined run (Si and Sc)



Layout





This figure shows event of muon's track. This track is all HBU event. We can observe track event.

Summary and plan

- We were able to test combined DAQ at PS.
- We could observe like a track of muon.

Plan

- We will try to make strip splitting at EBU
- We search track event between Si and Sc

BACKUP

Si and Sc DAQ



(adc_hg[2][0] - 311.151023)/100.393779 {trig_hg[2][0]==1&&iscadif==0&&(adc_hg[2][0] - 311.151023)/100.393779 }



Si & Sc's distribution of "bx"



Evidence of synchronization of Si and Sc layers

- BX number: tagged at SKIROC/SPIROC by counting BX clock(2.5 MHz in Si, 250 kHz in Sc)
- Difference of electronics caused fixed 'time shift' on the origin of BX number
- Si hits are selected and compared with every Sc hits at the same readout cycle
- Compare the BX number reported from Si and Sc ASICs
- The peak shows the fixed time difference (of ~110 Sc BX = 440 usec)which is consistent with measured delay of electronics Tau and ECAL analysis meeting 10



Gain calibration

- Calibration with cosmic is inefficient because we can only acquire 3ms /spill due to the limitation of electronics(readout time is 50-100ms)
- We measured gain used isotope

(57Co-> 122keV(86%),136keV(11%), gamma ray)



- Red line : pedestal
- Blue line : signal
- Only first memory cell of
 each channel is used for the
 analysis because we suffer
 from unstable ground level
 for following memory cells in
 current electronics

Gain calibration





- Gain is defined by the difference between pedestal peak and signal peak
- Gain distribution is around 5% in most of channels
- Two channels with lower gain (by around 20%) found

Gain difference can be caused by electronics

Gain calibration

57Co spectrum after pedestal/gain calibration



Sc layer layout



Setup





• Spill:3ms

- All merged channels are masked
- Some noisy channels are also masked(chip 0,1,3)

Tau and ECAL analysis meeting



of merged or noisy channels.

We could observe silhouette of pion beam.

Track event



SiとScのDAQによる時間差は、bx=110となっているためそれで時間を合わせた、ある muon RUNでのtrack event。 HBUではtrackが引けているがSiと合ってない。