Svx simulation
Charge sharing, make strip for Stripixel

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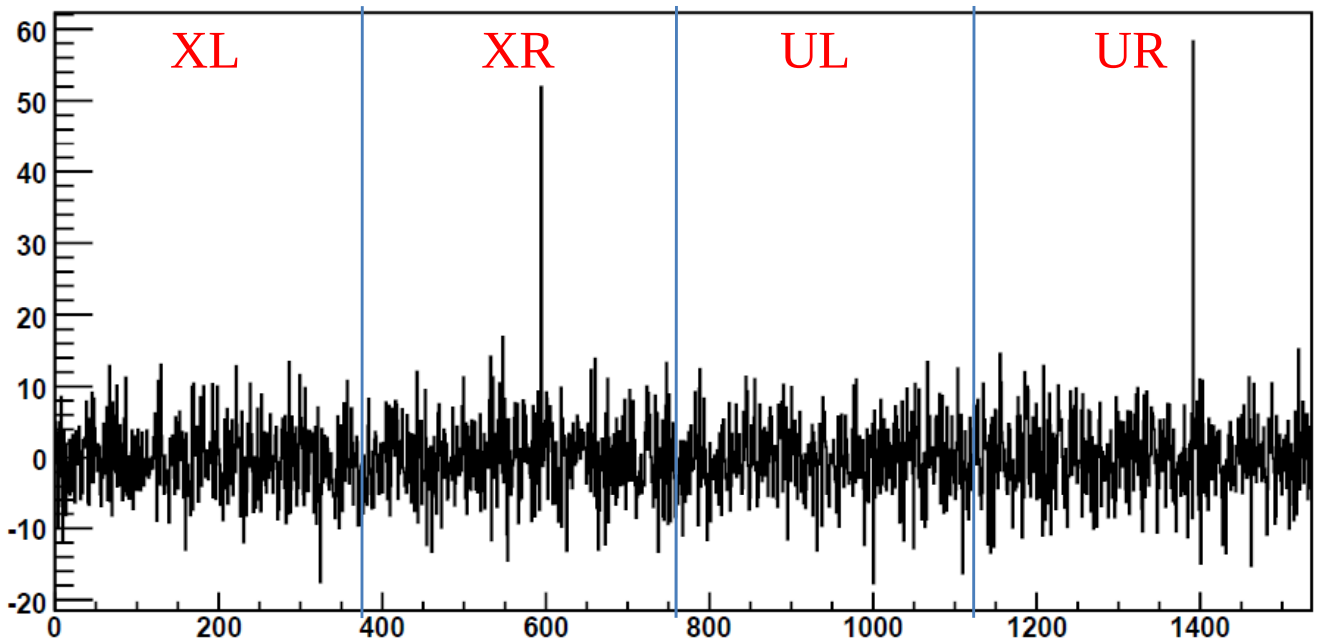
Outline

- Things are implemented so far
  - Charge sharing btw strips in phi. (Sasha)
  - Charge sharing btw x-u (sAQ=0.18)
  - (should be default in CVS?)
- Make strip by hit information.
  - Actually it has been also implemented in making Rawhit class. (next page)
  - Program for ADC output is prepared.
    - Zero-suppression study (Akitomo)
    - Clustering (Ken'ich)
- ADC value for 1 MIP peak
  - Dead area in stripixel sensor was found…

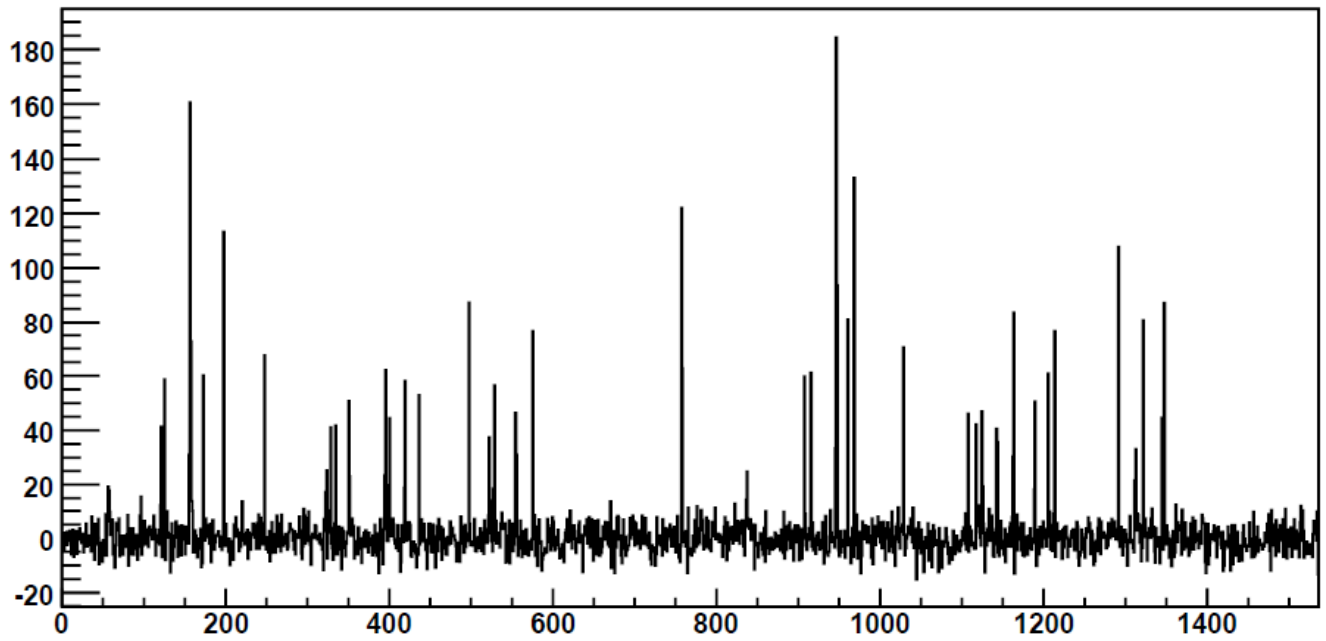
Make strip from hit information

- SvxSimreco calculates followings and restore to container.
  - ADC from dE/dx
    - Charge sharing in x-u.
  - CH number for x and u. ← **Need to check code more carefully…**
- Calculate all hits for all particles.
  - If same CH in x or u, sum of these ADCs. → strip.
  - nhit++ (my local variable in Rawhit class)

ADC vs. CH in 1 sensor for in 1 event looks like..

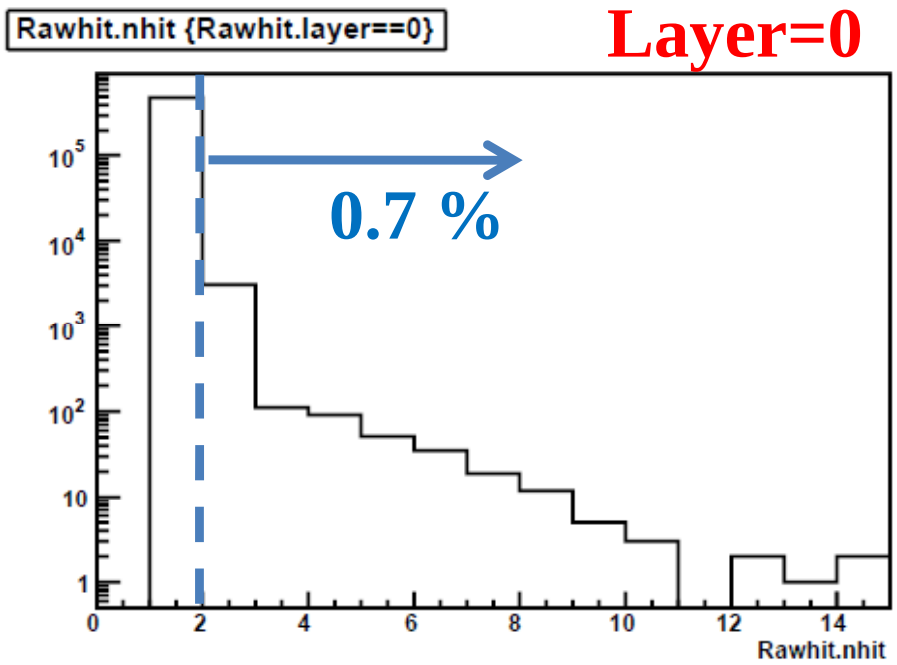


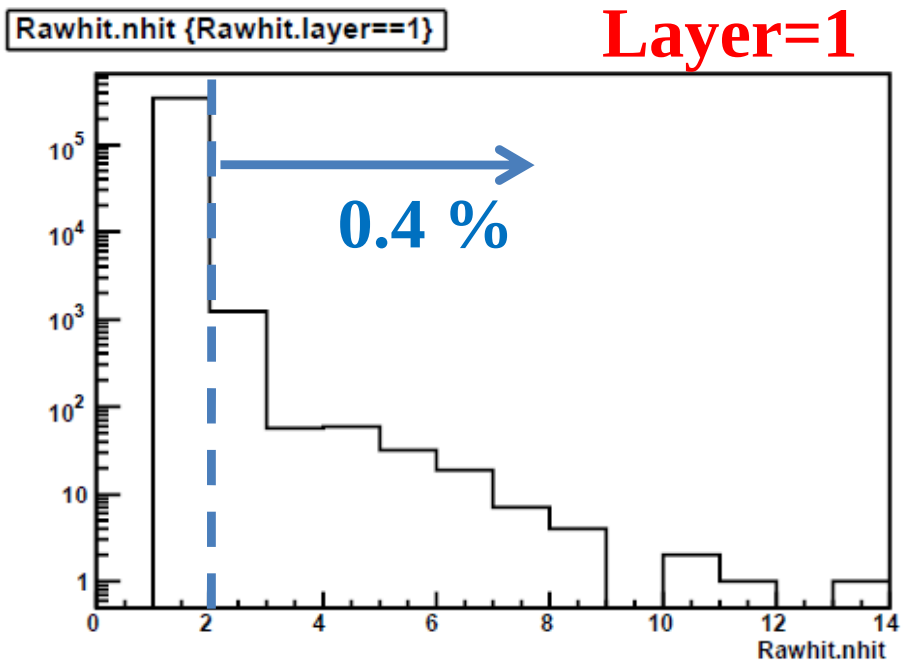
Single π^+ simulation
$5<p_T<20$ GeV/c
$-1.2<\eta<1.2$, $0<\phi<2\pi$
vtx pos : x=y=z=0

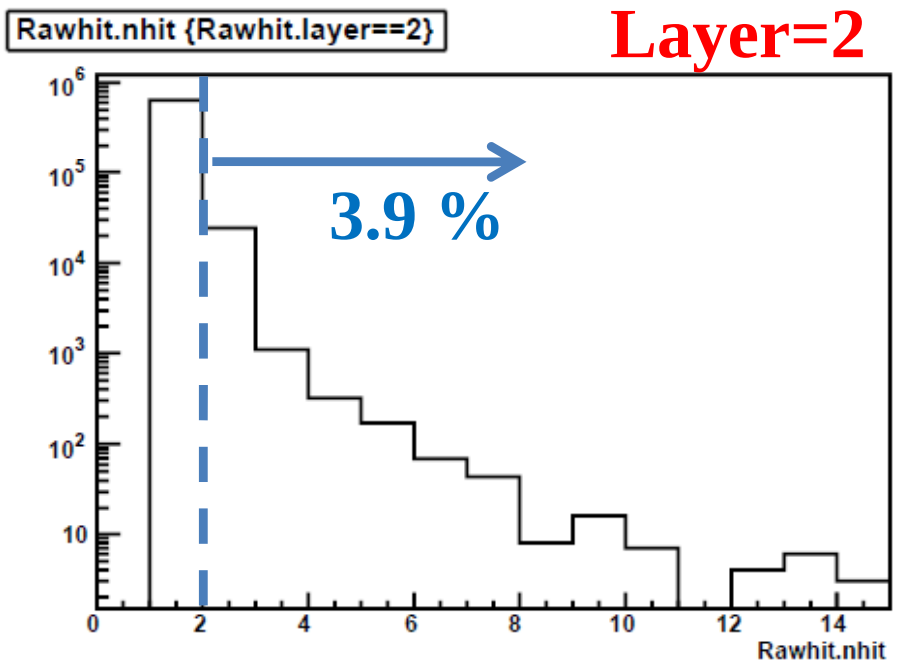


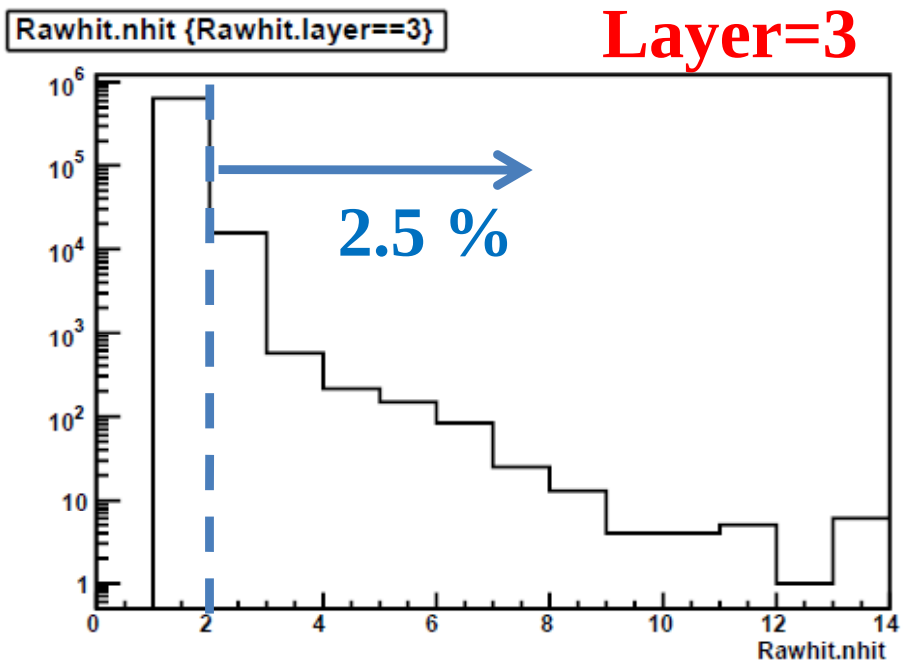
Hijing : most central AuAu

nhit in 1 CH for hijing simulation

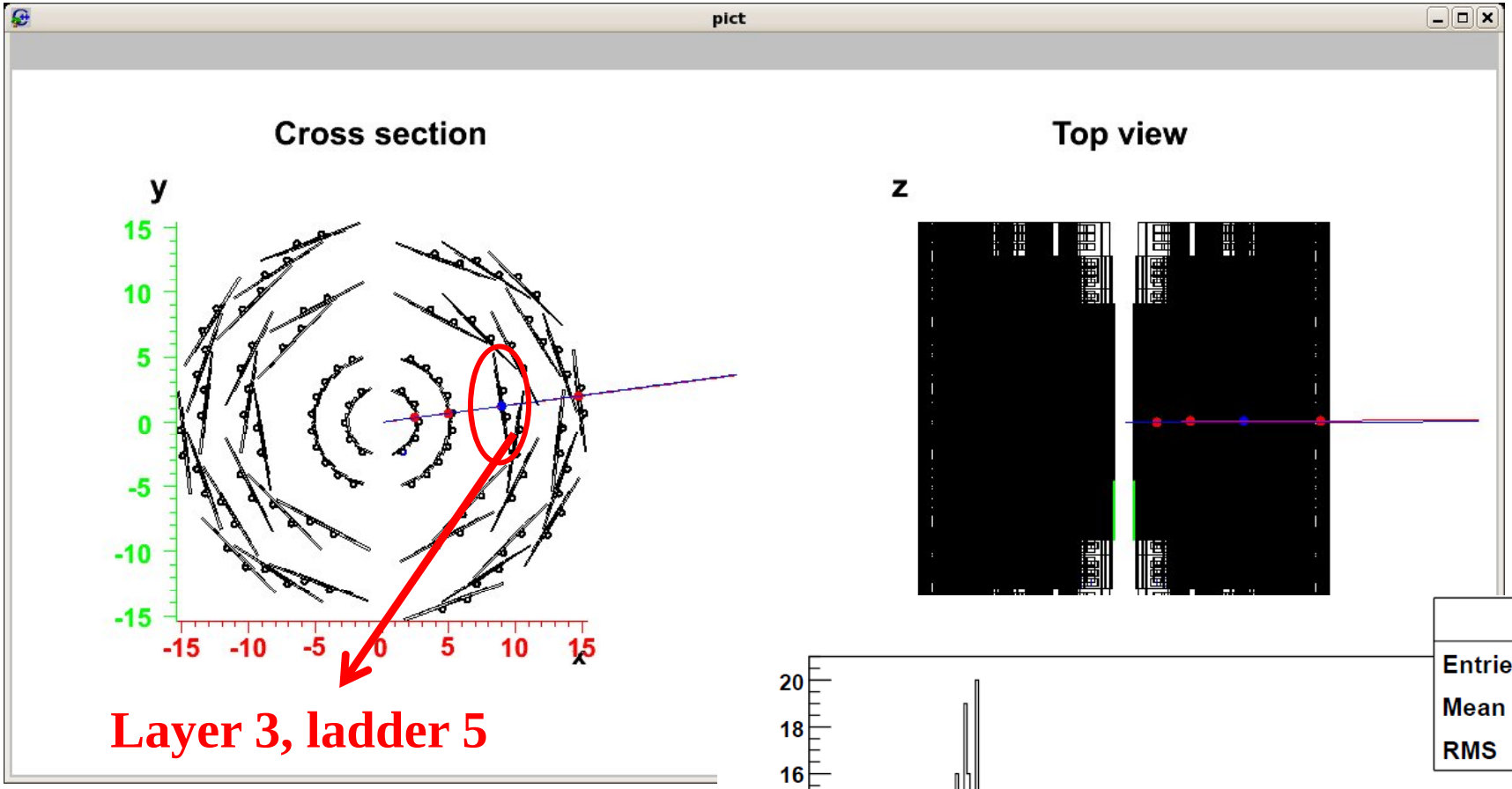


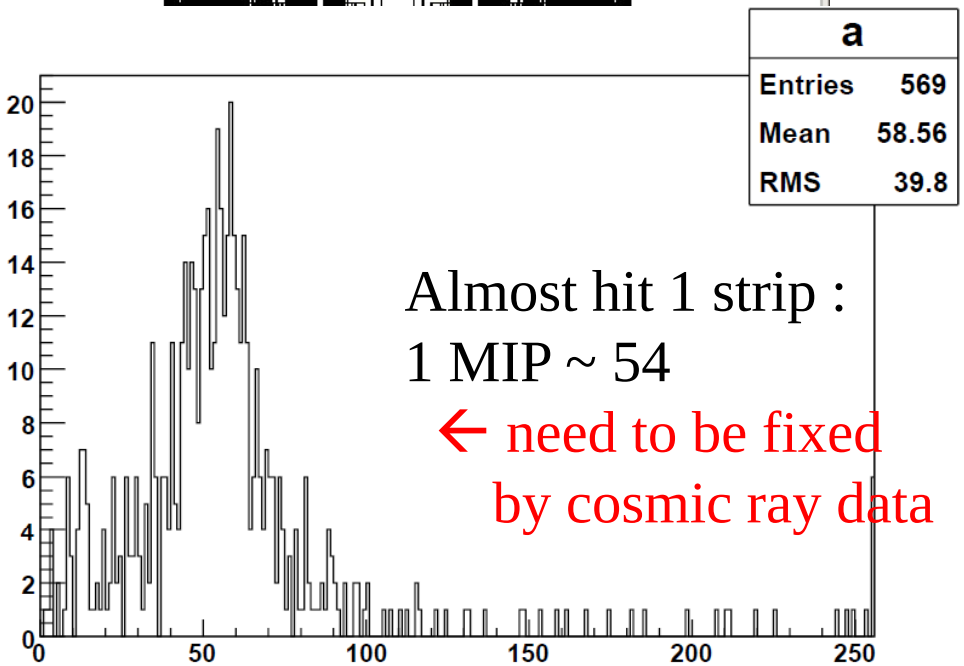






How much is ADC value for 1 MIP in PISA?

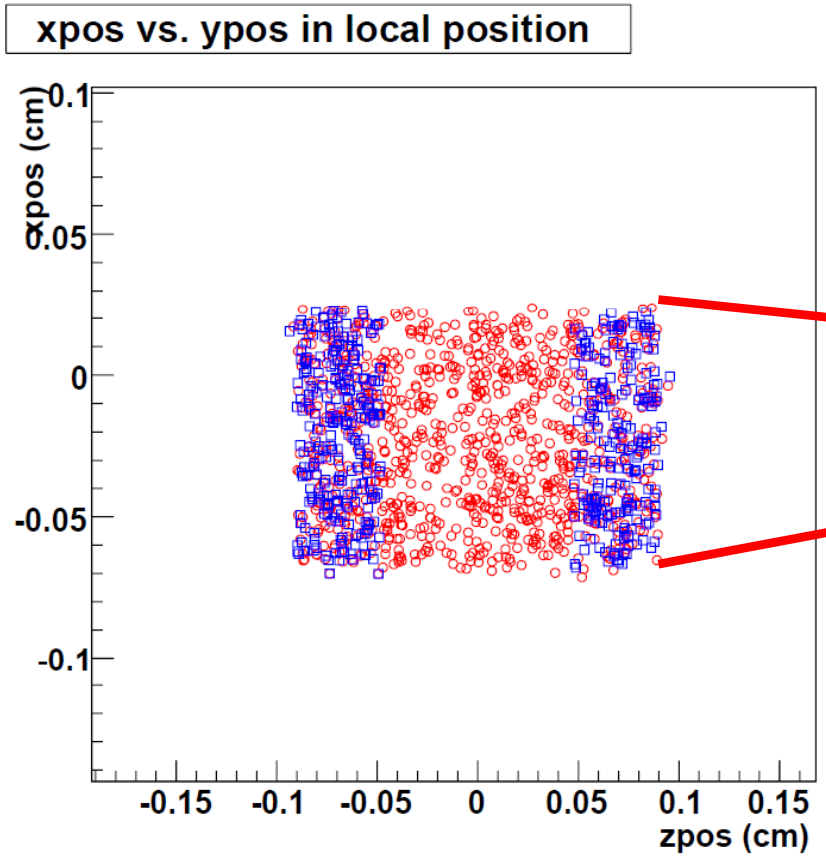


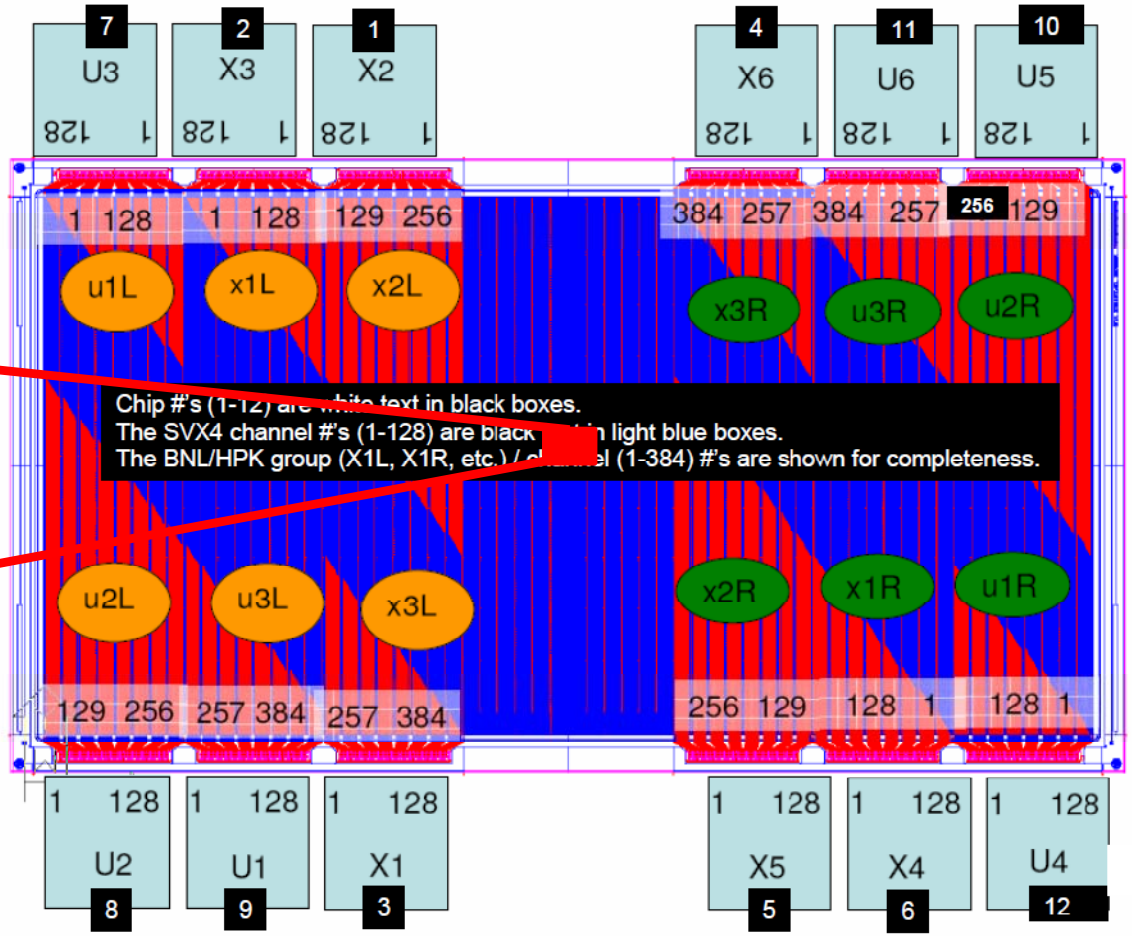


Almost hit 1 strip :
1 MIP ~ 54
← need to be fixed
by cosmic ray data

Single π^+ simulation
$5<p_T<20$ GeV/c
$-0.01<\eta<0.01$, $0.15<\phi<0.16$
vtx pos : x=y=z=0

Dead region btw 2 readout sections.





Red : Geant hit.

Blue : Geant hit in case of Rawhit is filled

Dead region should not be in the current stripixel.

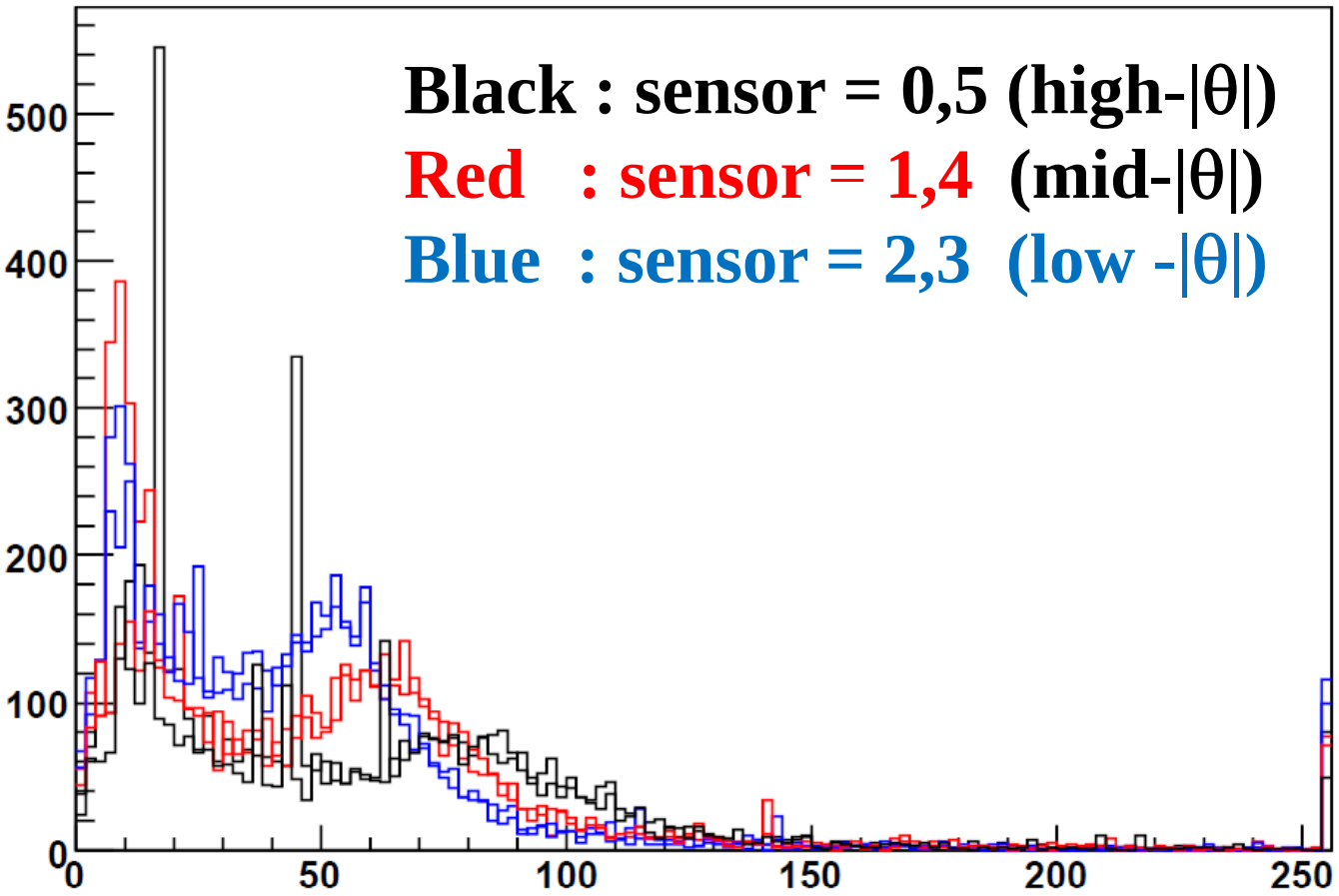
→ need to be fiexed.

Summary

- First program for charge sharing and making strip are implemented.
- To do
  - Check channel assignment carefully.
  - Dead region should be removed.

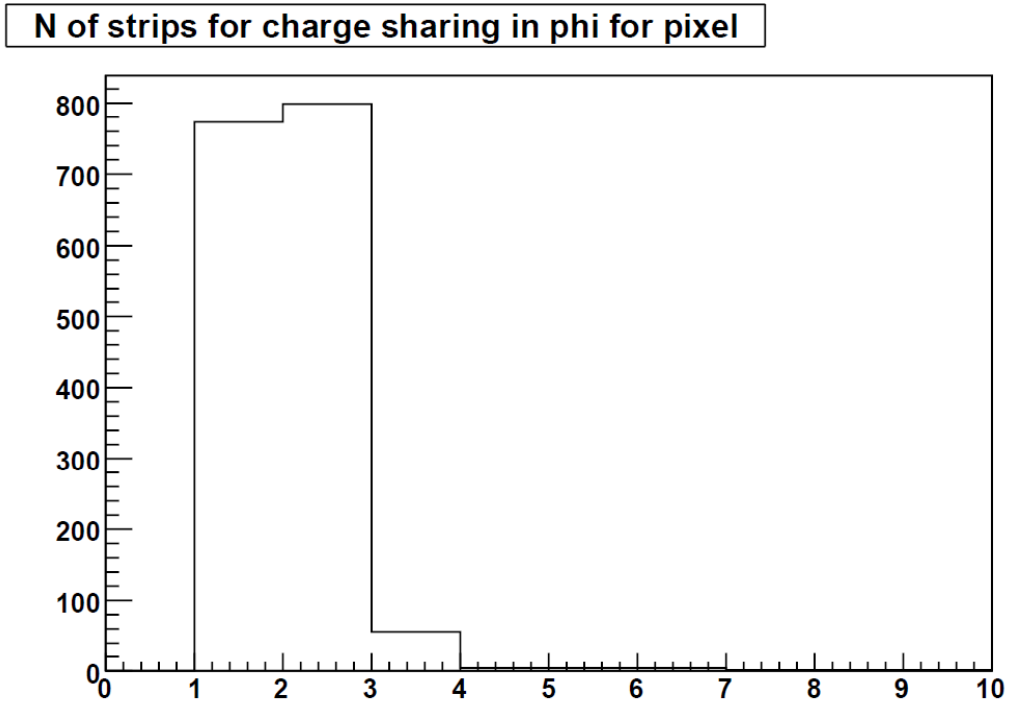
backup

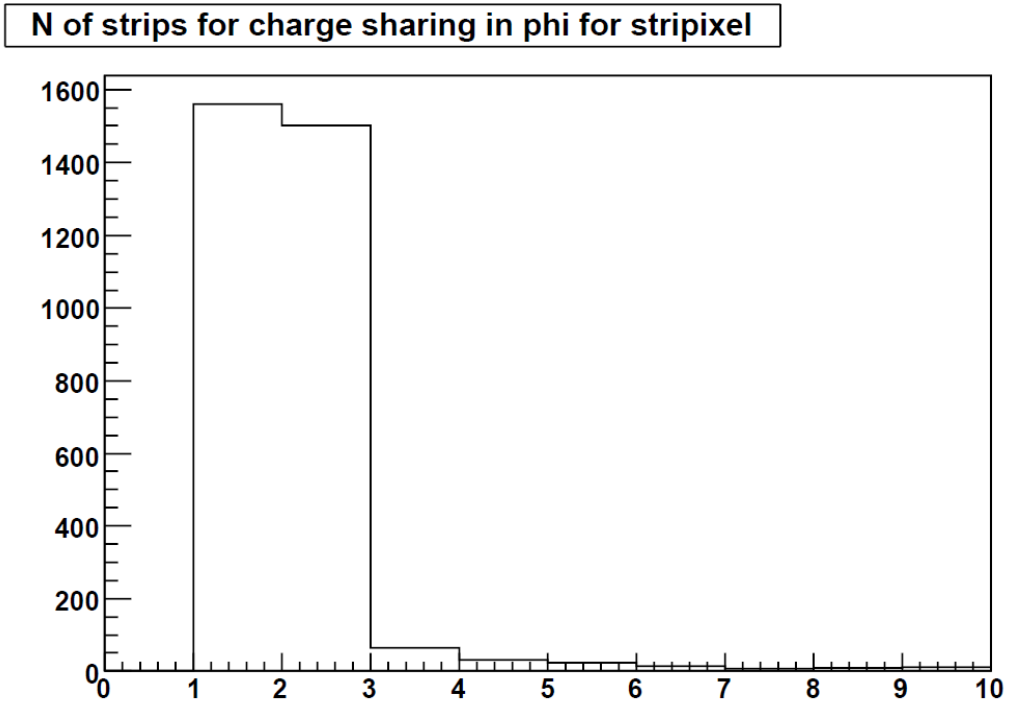
Semi theta dependent ADC



Single π^+ simulation
$5<p_T<20$ GeV/c
$-1.2<\eta<1.2$, $0<\phi<2\pi$
vtx pos : x=y=z=0

Number of strips for charge sharing in phi.





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ADC conversion in SimReco

- ADC conversion
  - dE * siIonPot * adc_gain
    - dE : energy loss in PISA (GeV)
    - siIonPot : 0.27777.. e^9 (/GeV): inverse of e pair creation (3.6 eV/pair).
    - adc_gain : 0.002 : should be ADC conversion for svx4...
      - From http://lss.fnal.gov/archive/test-tm/2000/fermilab-tm-2318-e.pdf , Pre amp gain : 3 mV/fC
      - Shaper gain??
      - 1 pair corresponds to $1.6e^{-4}$ fC
      - I am missing “mV” to “channel”…