On cluster counting

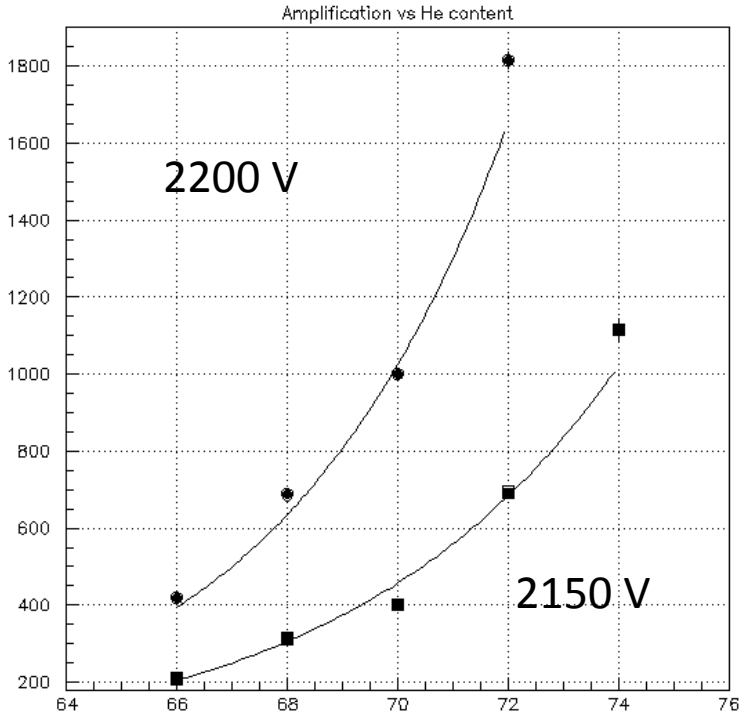
M. Piccolo

SuperB DCH R&D meeting

14/03/2010

Testing amplification vs He content

- Pulse height (in)stability vs. different parameters.
- Δ Ampl. Vs. Voltage (2% / Volt)
- Δ Ampl. Vs. Helium content
- Gas amplification evaluation.
- From the plot on the right:
- $\Delta A/A = 20 * \Delta He/He$ @ 2150
- $\Delta A/A = 25 * \Delta He/He$ @ 2200

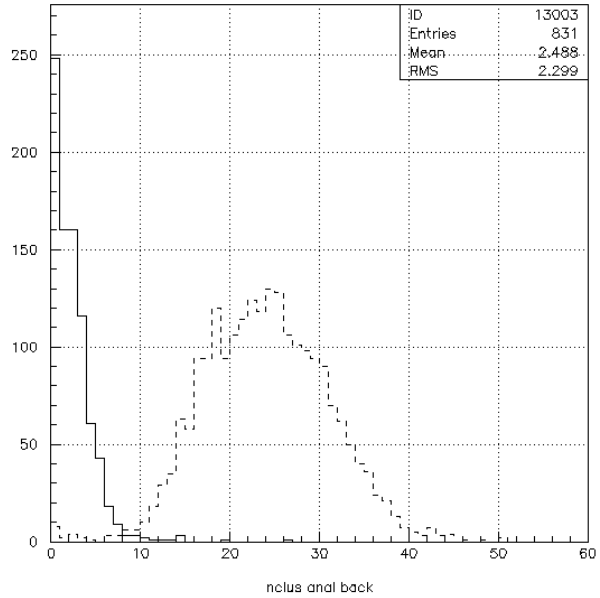


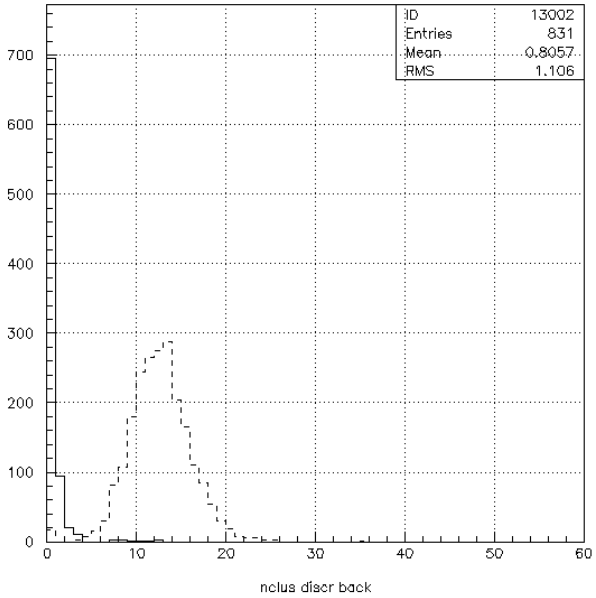
Evaluation of gas Amplification

- From calibration runs the electronic gain has been measured at 300. (10% error due to the feed-back capacitor uncertainty)
- From Garfield run (at nominal mix value) one expects 30 clusters in our detector.
- Most probable charge @ 2150 with 70-30 He/Meth mix is 400 pCoul.
    - Gain $=2.5*10^5$

Cluster distr.

- Anal. Counting

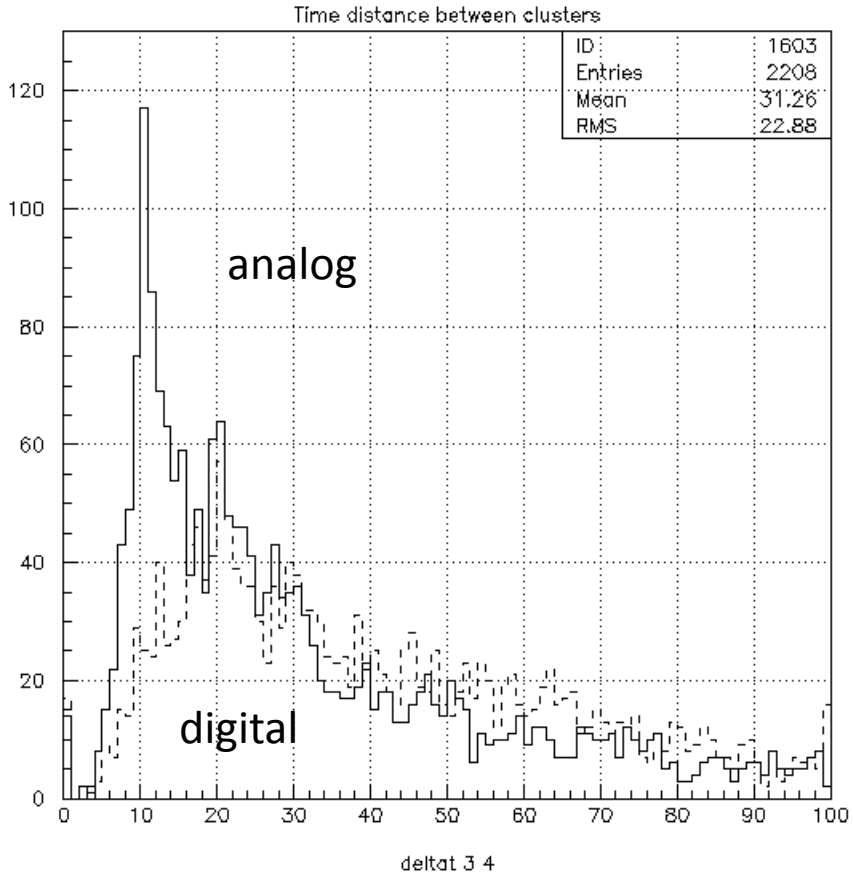




- Digital counting

Where are the missing clusters ?

- Look at the time distance between clusters:



Conclusions

- We are beginning to understand our measurements.
- Probably our dead time in counting clusters is a bit long.
- We'll confirm with Garfield simulations.
- Good progress on gas mixes.
- He/Meth looks good at 70/30.