



Second look at the FLAME data

17.06.2020

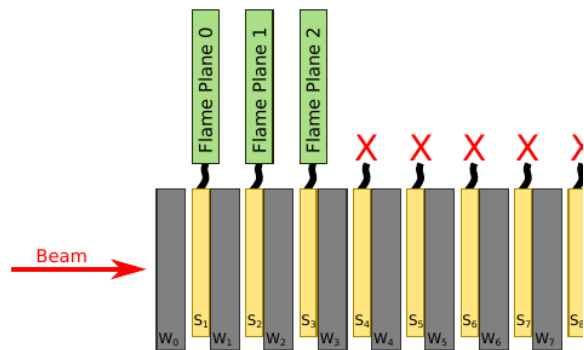
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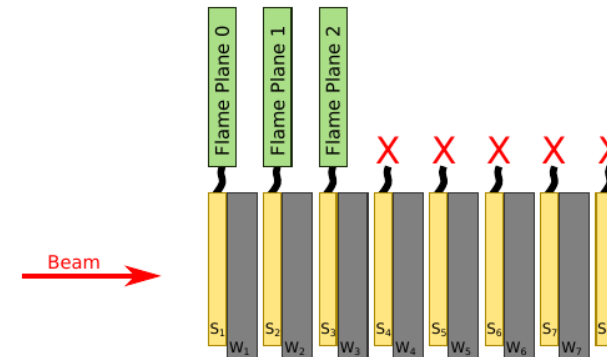
This study aims at:

- Look at two other, well-defined data sets of A and A- configuration
- As previously
 - Plot amplitudes
 - Separate signal from noise
 - Look at correlations between adjacent planes
- Compare A and A- configurations
- Looking at correlations between adjacent planes

Runs under consideration



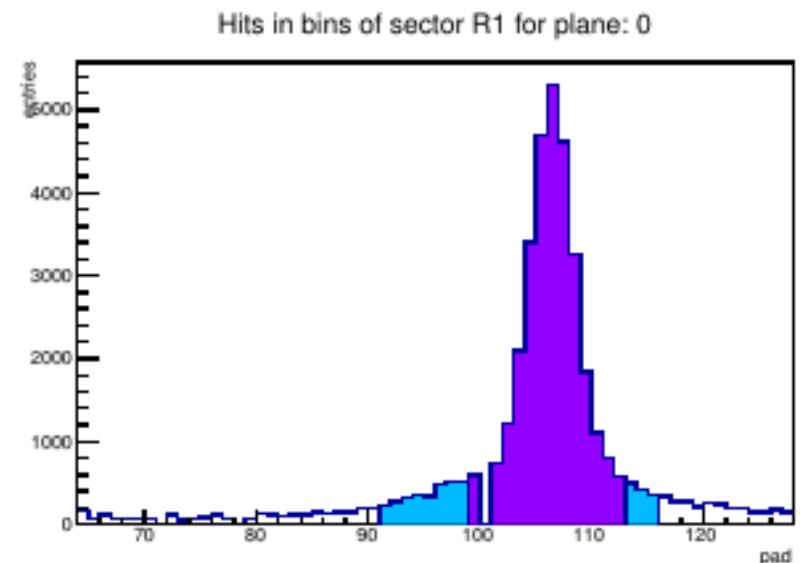
- **TB_FIRE_912**
- **Conf. «A»**
- **Energy scan (5 GeV)**
- **~ 49k events**



- **TB_FIRE_864**
- **Conf. «A-»**
- **XY scan (18 channel)**
- **beam energy 5 GeV**
- **~ 50k events**

Pad ranges under consideration

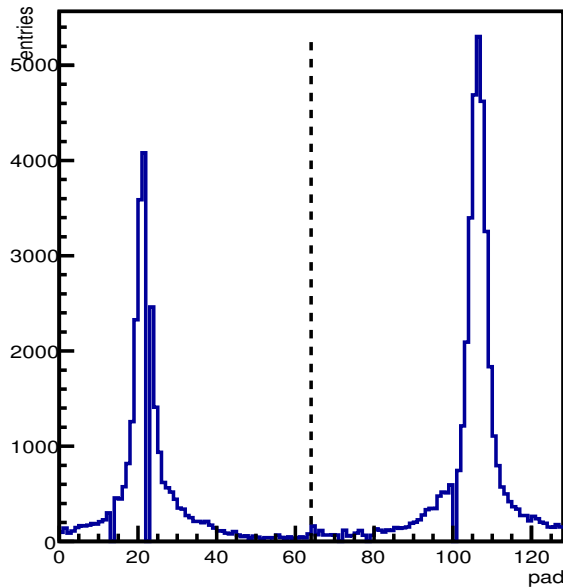
- For both runs
 - Basically sector R1
 - ~14 central (violet) pads for each plane
- Central pads give
 - less noise
 - slightly better shape of signals



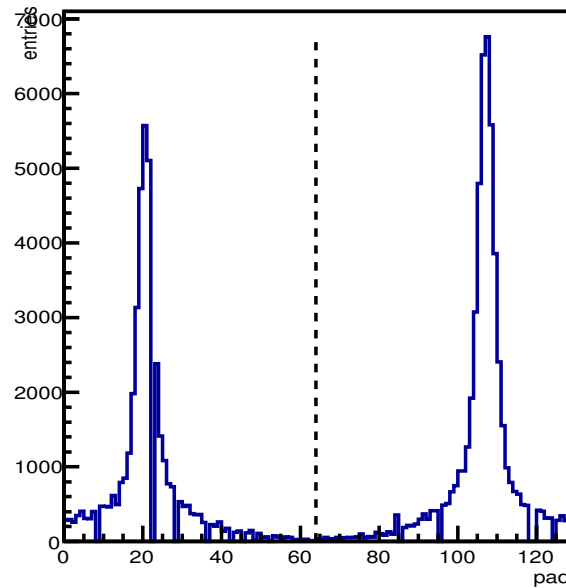
Run 912: weird hit map in 3rd plane

1D hit maps for 3 planes

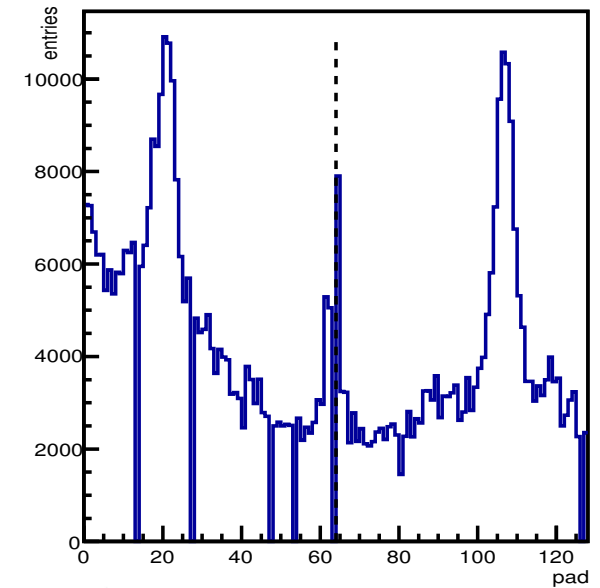
Hits in bins of sectors R1 and R2 for plane: 0



Hits in bins of sectors R1 and R2 for plane: 1

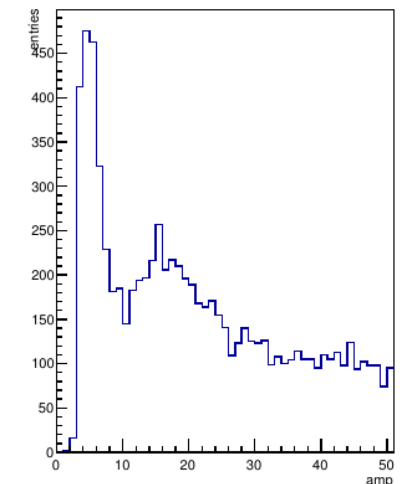


Hits in bins of sectors R1 and R2 for plane: 2



3rd plane

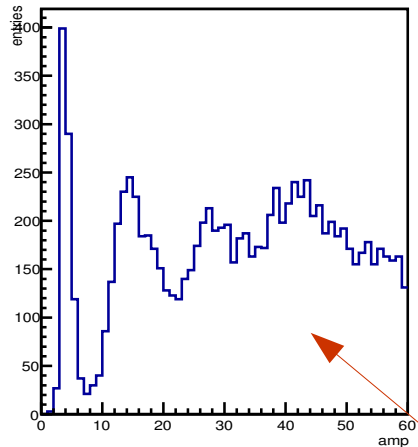
- High hit rates over the whole area,
- No further amplitude peak after MIP



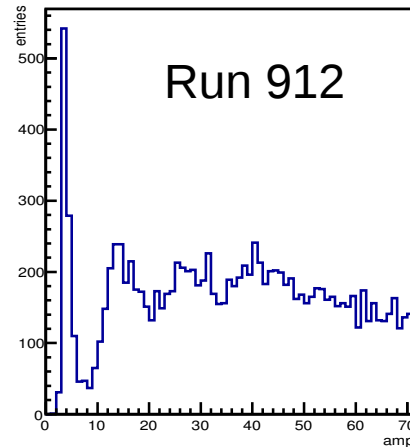
Max amplitudes distributions

Max amplitudes among all pads & timeframes in event for each plane

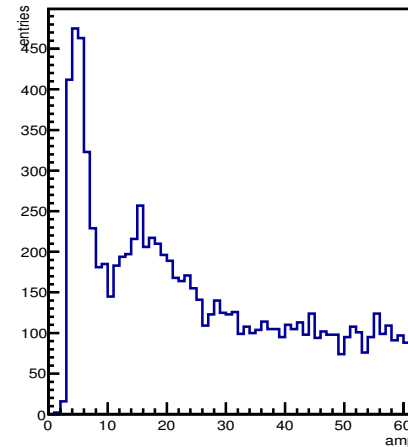
Max amplitude for plane: 0



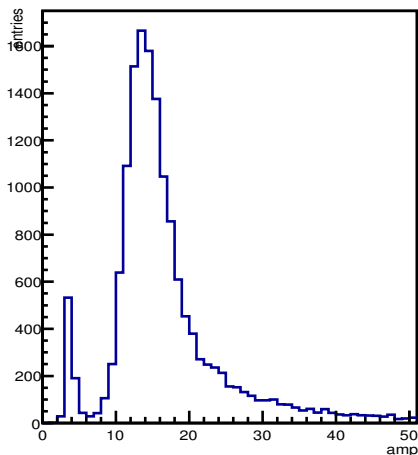
Max amplitude for plane: 1



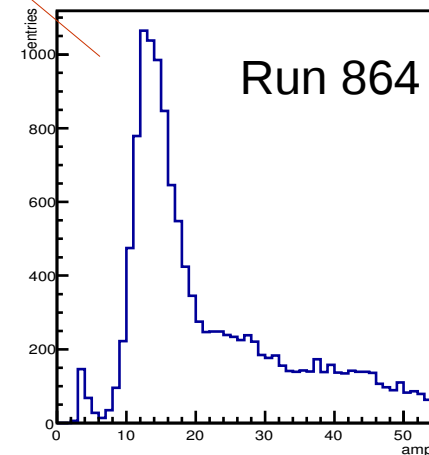
Max amplitude for plane: 2



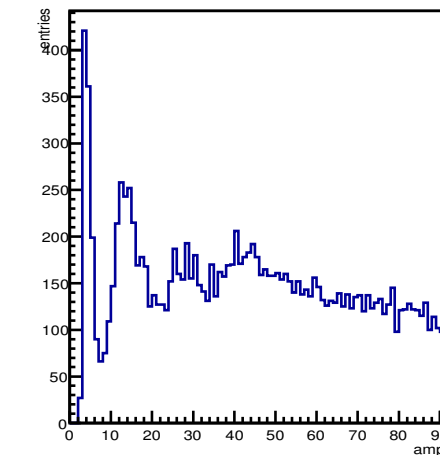
Max amplitude for plane: 0



Max amplitude for plane: 1

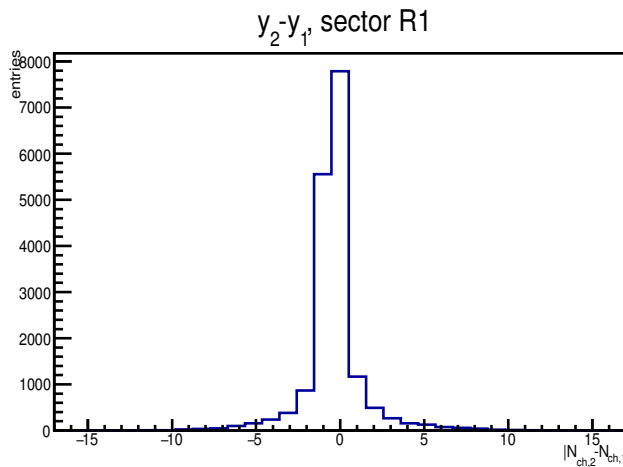
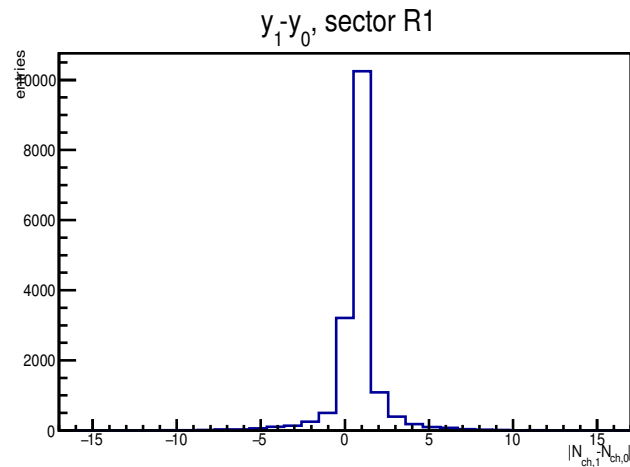
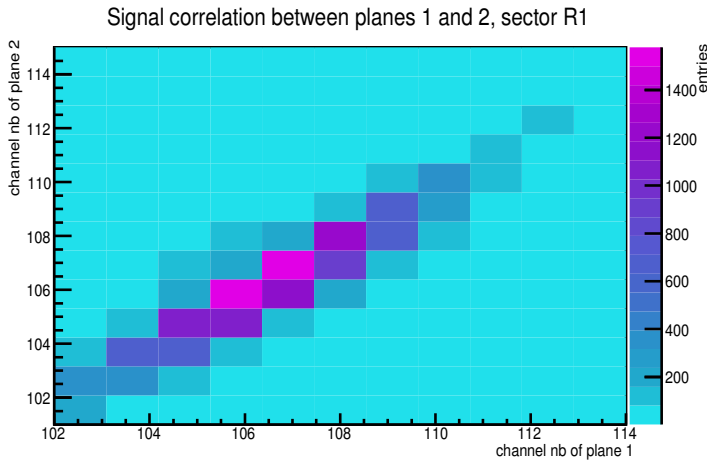
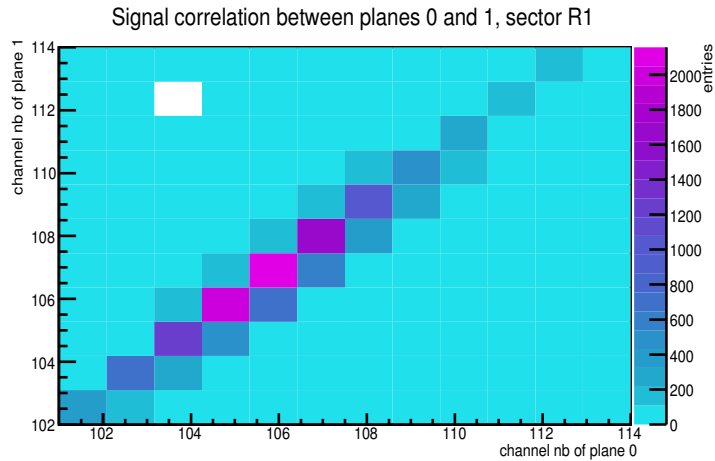


Max amplitude for plane: 2



- 1st plane of R864 is clear MIP signal
- Signal in 2nd plane of R864 expected to be more like signal in 1st plane of R912
- 2nd of R912 and 3rd of R864 are similar

Correlation of max signals between planes



Run 912

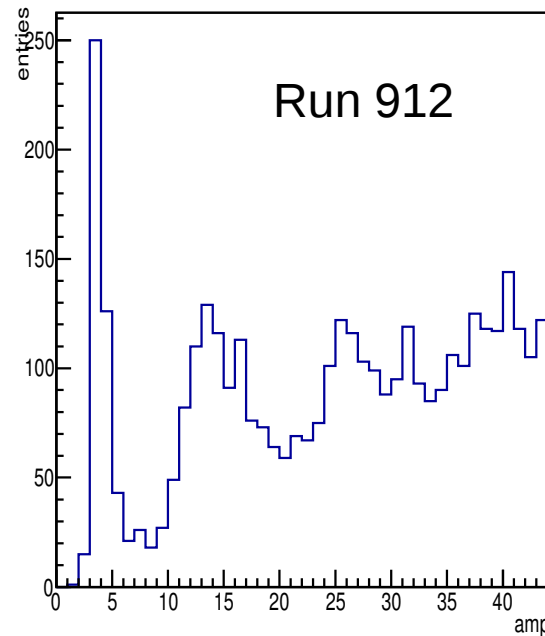
(for R864 the same)

- Signals are well-correlated,
- max-signal pads in plane 1 are +1 to correspondent ones in plane 0
- e- crosses bin boundary between 1st and 2nd planes

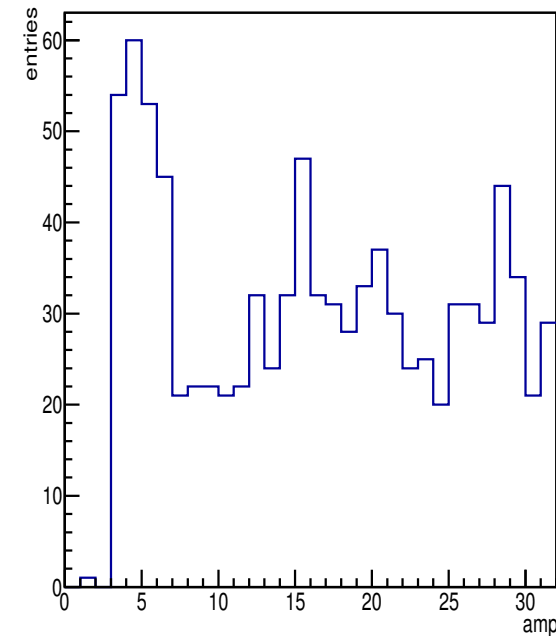
Amps in planes 1,2 when signal in the previous one is present

- Δy_{01} , $\Delta y_{12} \leq 1$
- Amplitude in previous plane is right to the pedestal
- For both runs (especially for R864) noise tail is lowered after applying the geometrical correlation.
- Signal responds to one in upstream plane

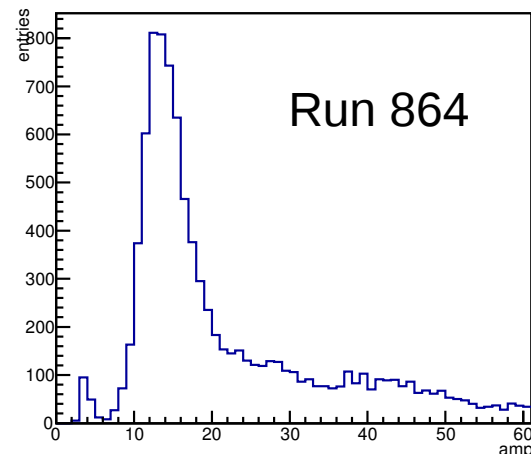
Amplitude of plane 1 correspondent to max of plane 0



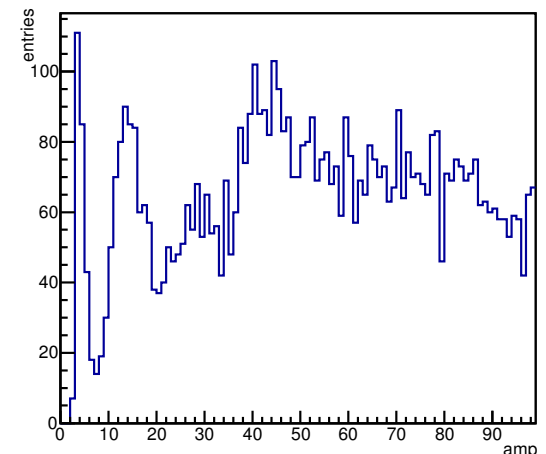
Amplitude of plane 2 correspondent to max of plane 1



Amplitude of plane 1 correspondent to max of plane 0



Amplitude of plane 2 correspondent to max of plane 1



Conclusions

- **Comparison of two runs of different configurations**
- **Feature in 3rd plane of Run 912**
- **Geometrical correlation between planes**
- **Noise is reduced if geometrical correlations required**