# First look at the FLAME data

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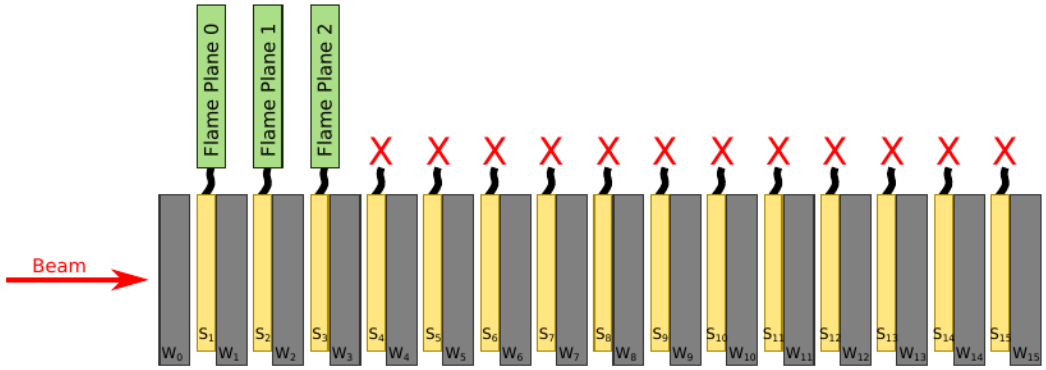
# The study aim at:

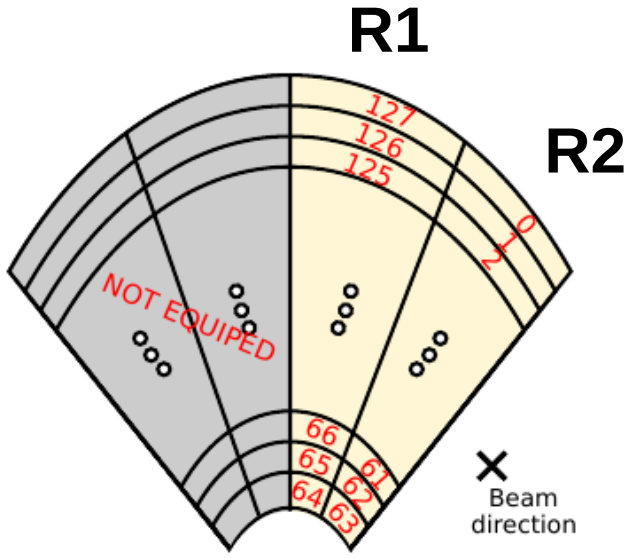
- Learning to work with FLAME data
- Understanding the physics in the 3 first layers, using amplitude dsitributions
- Signal/noise separation
- Looking at corellations between adjacent planes

# FLAME dataset

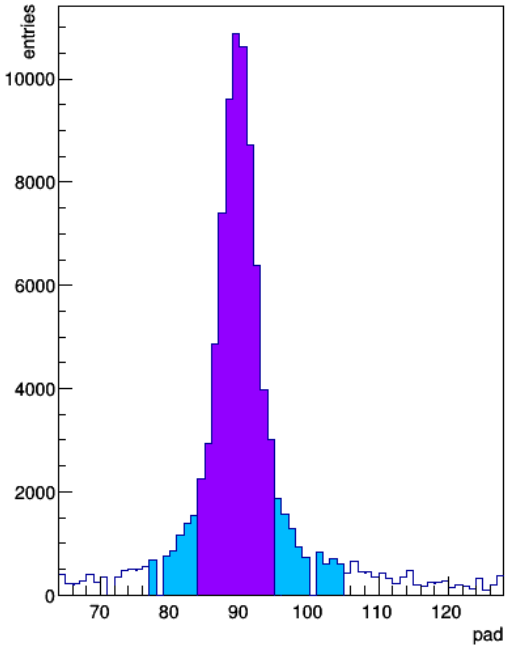
- TB_FIRE_676
- ~ 95k events
- beam energy 3.6 GeV
- Configuration «A»
- Thresholds in DSP lowered to:
  Pulse = 3 [LSB],
  FIR = 20 [0.125 LSB]

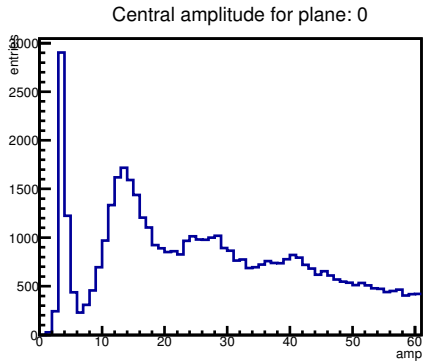


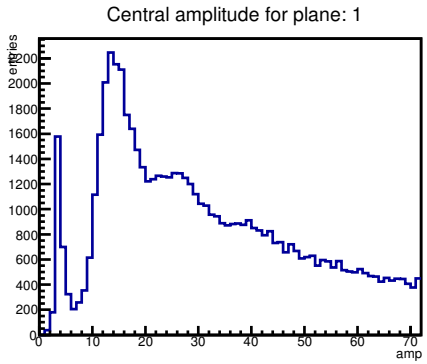

- Basically, sector R1 (ch 64-127) was used, ~56% of all hits

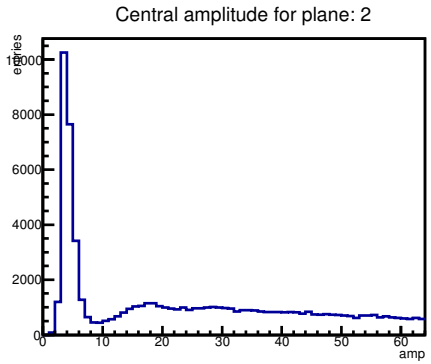


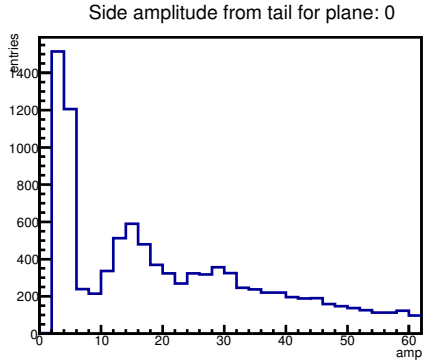
# Central pads vs side pads

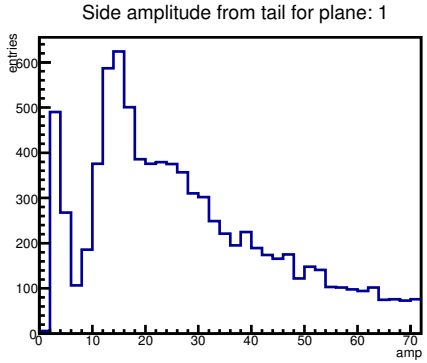


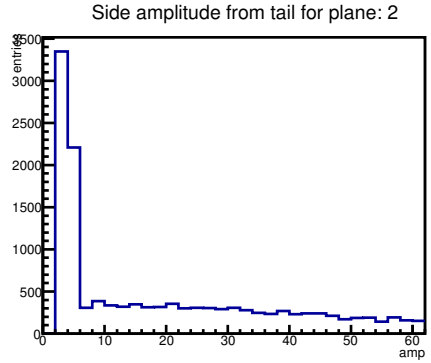



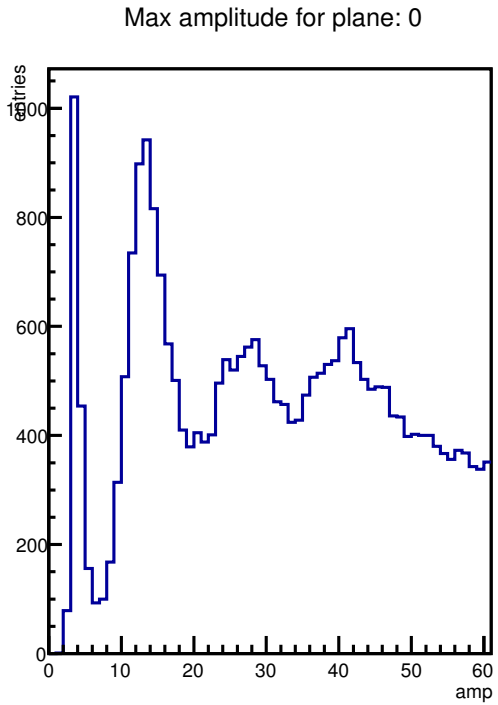



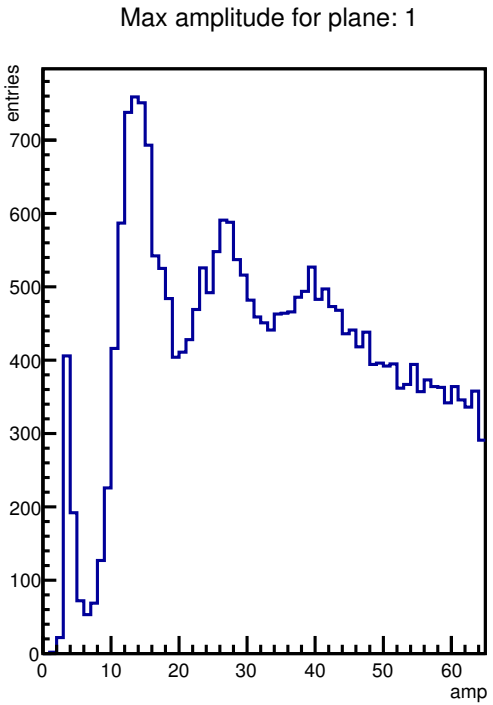

- R1 hits distrib.
- Central — violet,
- side — blue;
- ~5-10 % of the peak

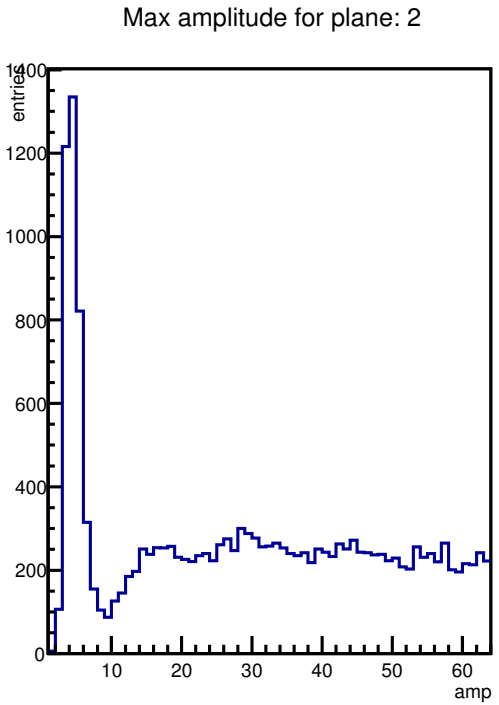
- Pedestal is higher for side events
- Small difference in main signal
- **Decided to use ~17 central bins**

# Max amplitudes distributions

## Maximum amplitudes among all pads & timeframes in event for each plane

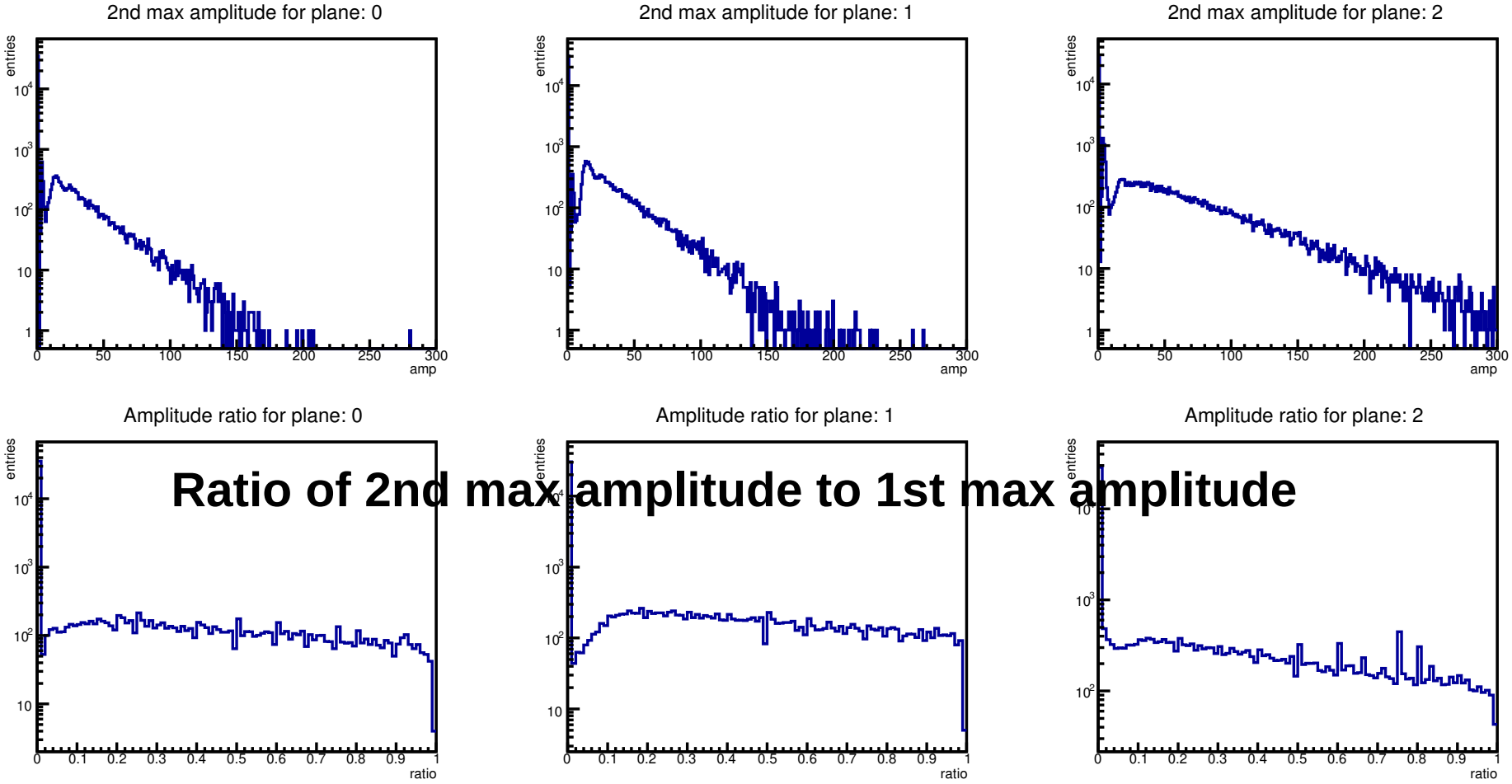


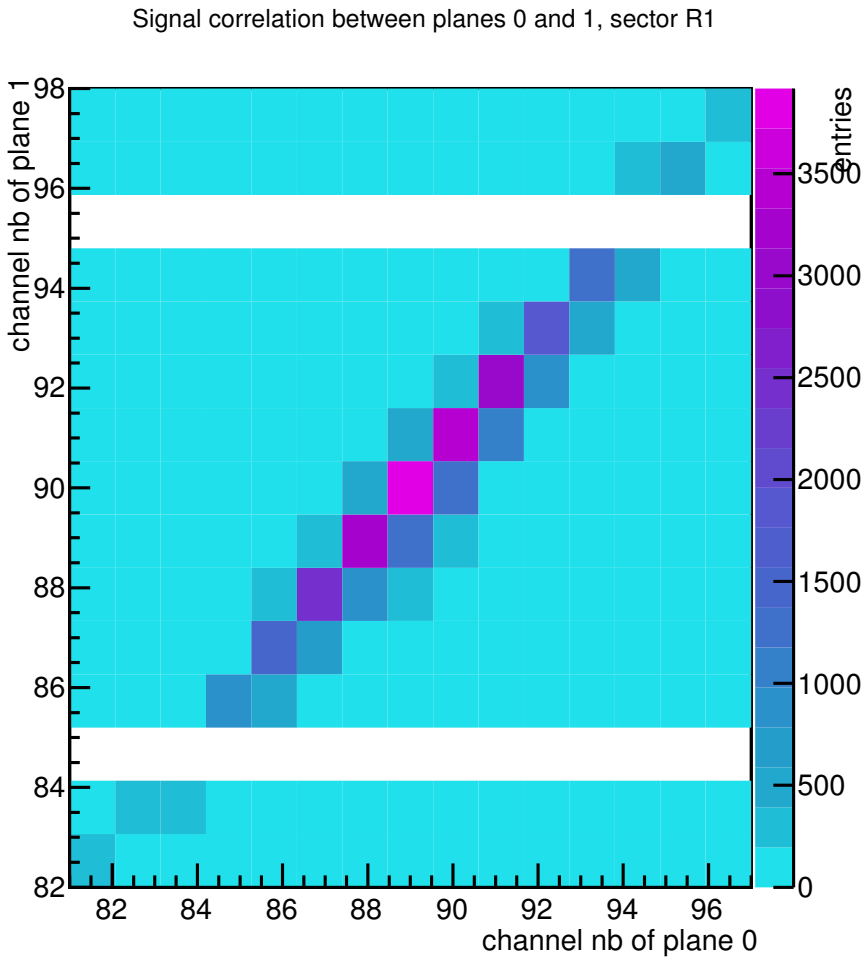

- Peaks are more clear, pedestal is lower
- Pedestal at 5, MIP at 15 ADC
- What are the next two peaks, 2 and 3 charged particles?

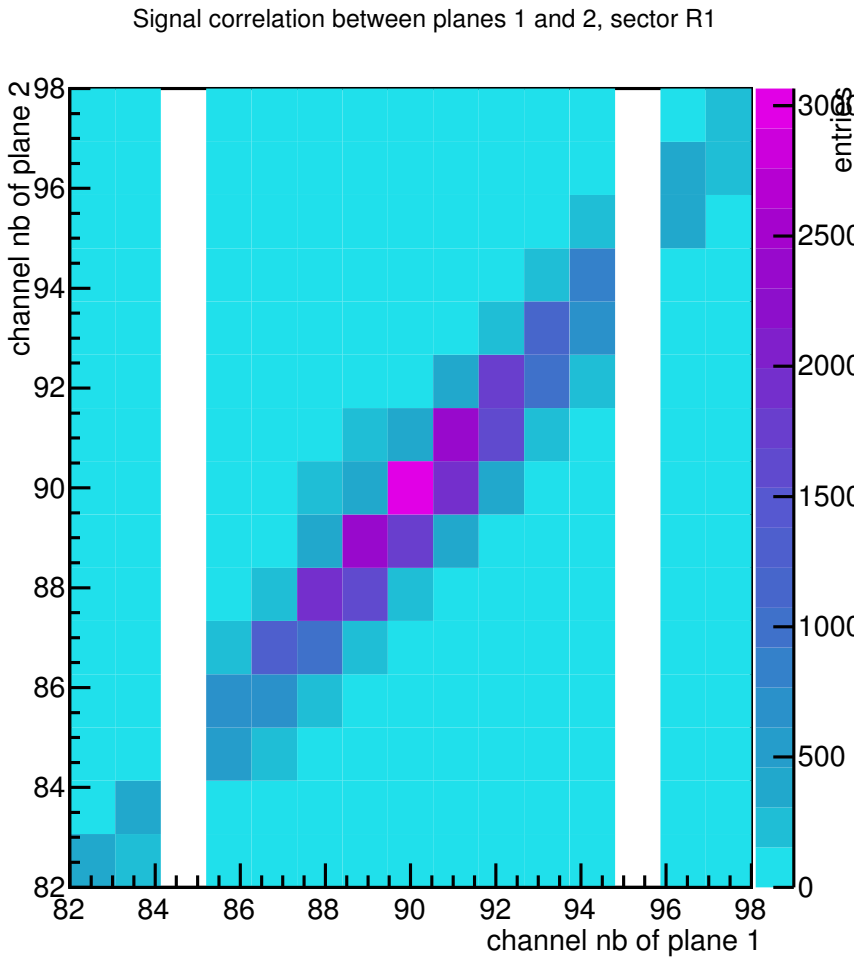
# 2nd max amplitudes and ratio to 1st




- Lots of zeroes among 2nd max amplitudes => Lots of 1st max amplitudes are alone
- Others are comparable with 1st max amps

# Correlation of max signals between planes



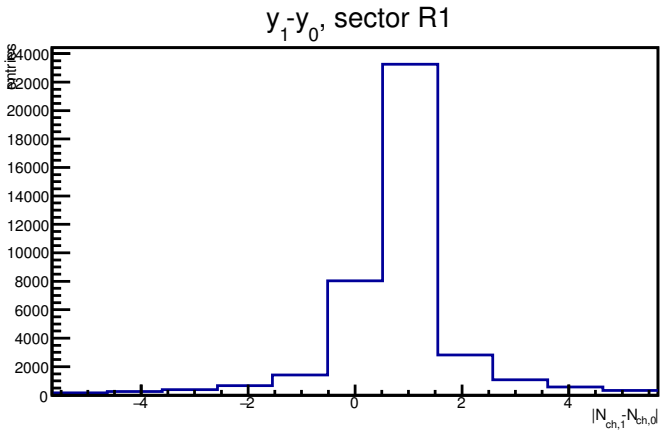



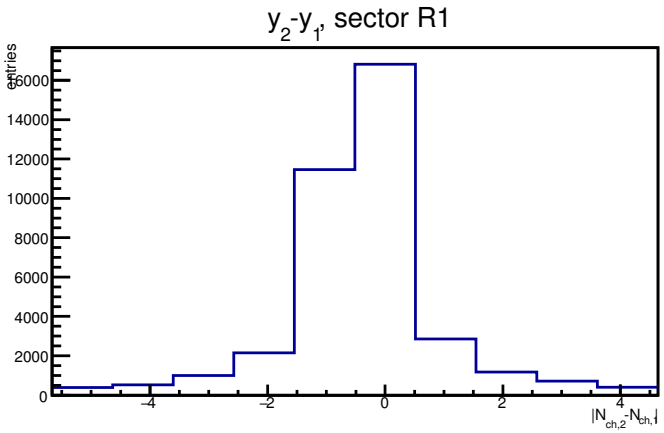

- **Signals are well-correlated,**
- **max-signal pads in plane 1 are +1 to correspondent ones in plane 0**

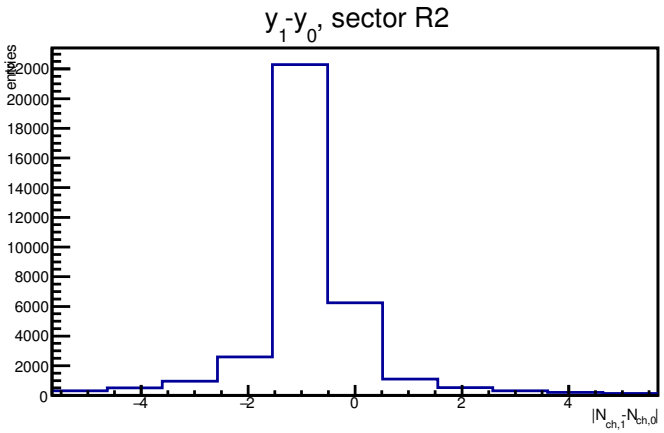
# Correlation of max signals between planes

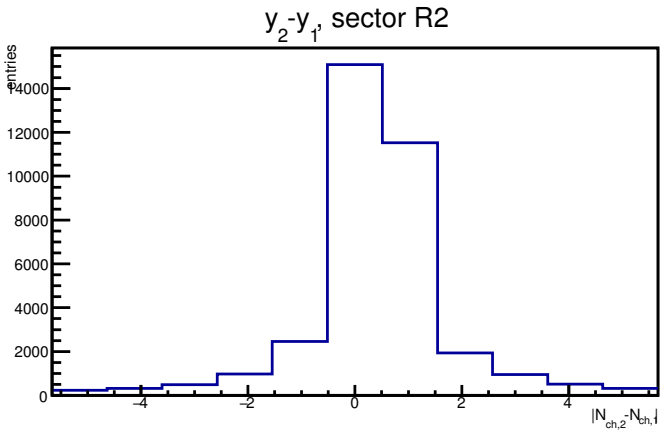
- **Difference between max-signal pads between adjacent planes for both sectors R1, R2.**

- **for R2 the same +1 in y coordinate in plane 1**
- **In plane 2 y coordinate persists**
- **Electron crosses pad boundary between 1st and 2nd planes?**



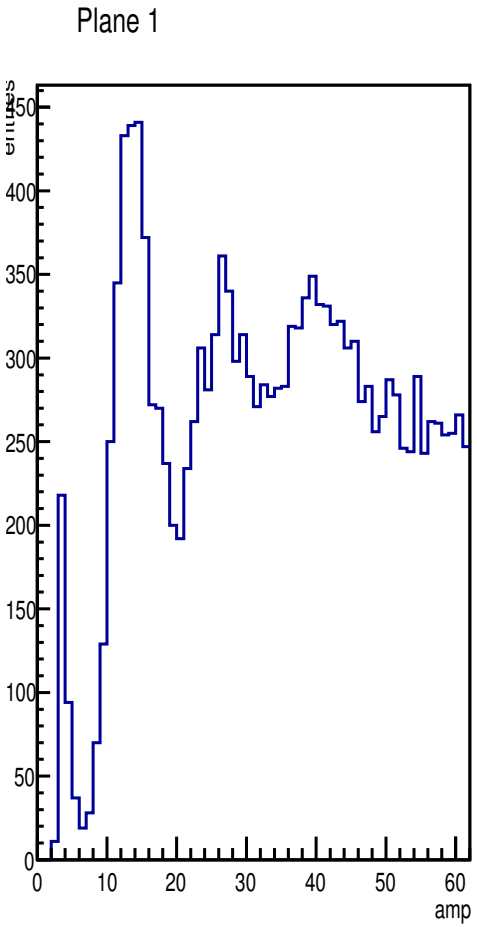



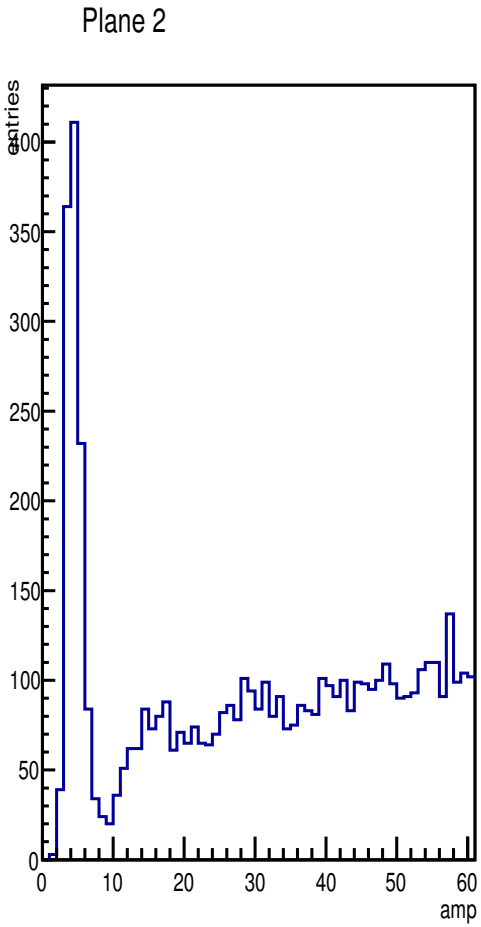



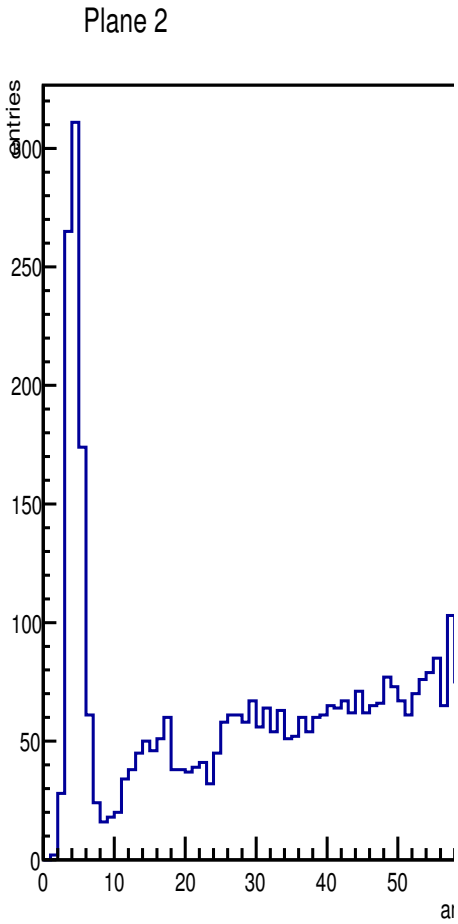
# Amplitudes in 1,2 when signal is present previous plane

- $\Delta y_{01}$ , $\Delta y_{12} \leq 1$
- Amplitude in previous plane is right to the pedestal

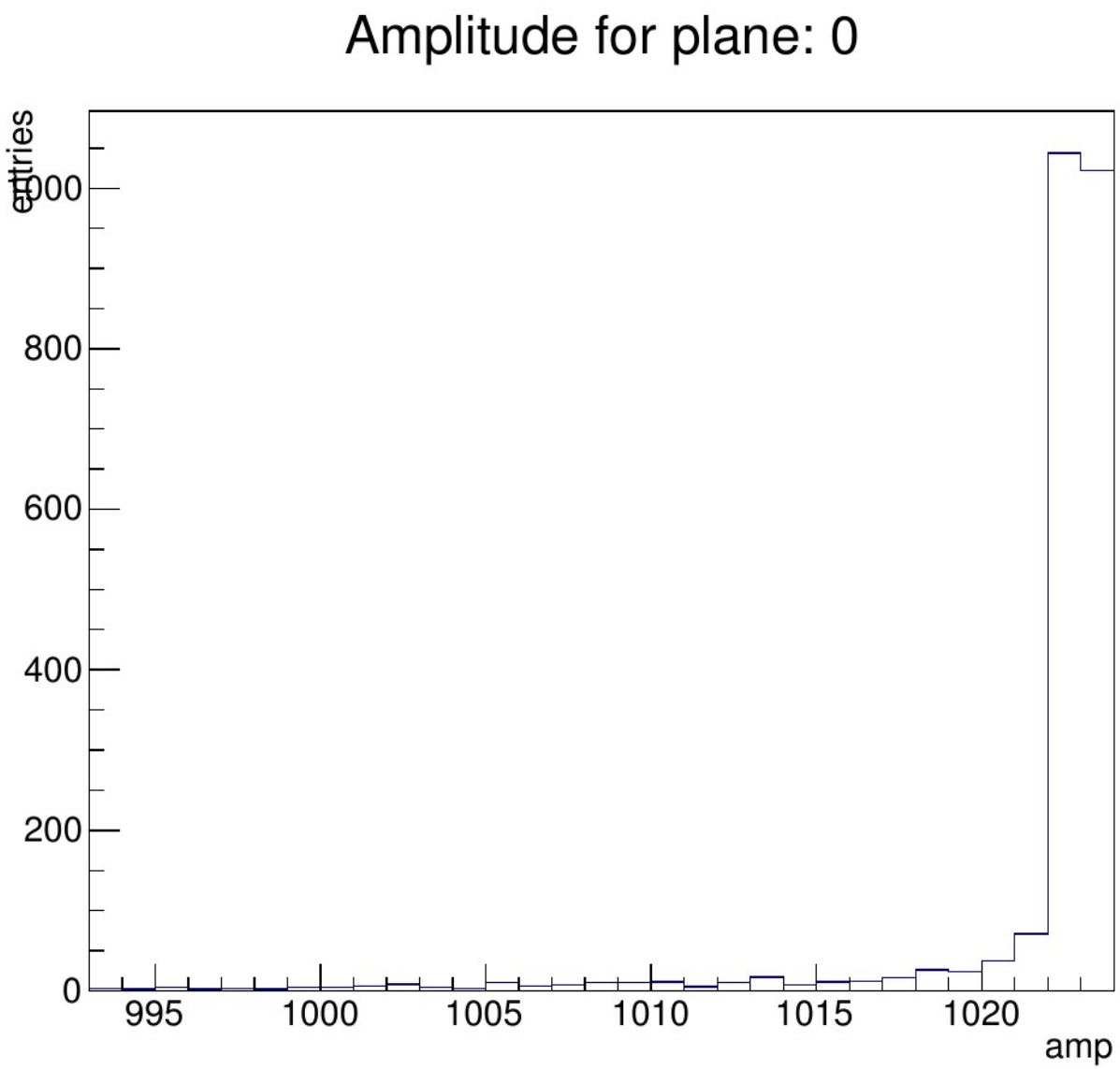
Pedestal is lowered after applying the geometrical correlation



# Is it worth including amplitudes>1000?



# Conclusions

- The analysis just started
- Geometrical correlation between planes
- Noise is reduced if geometrical correlations required