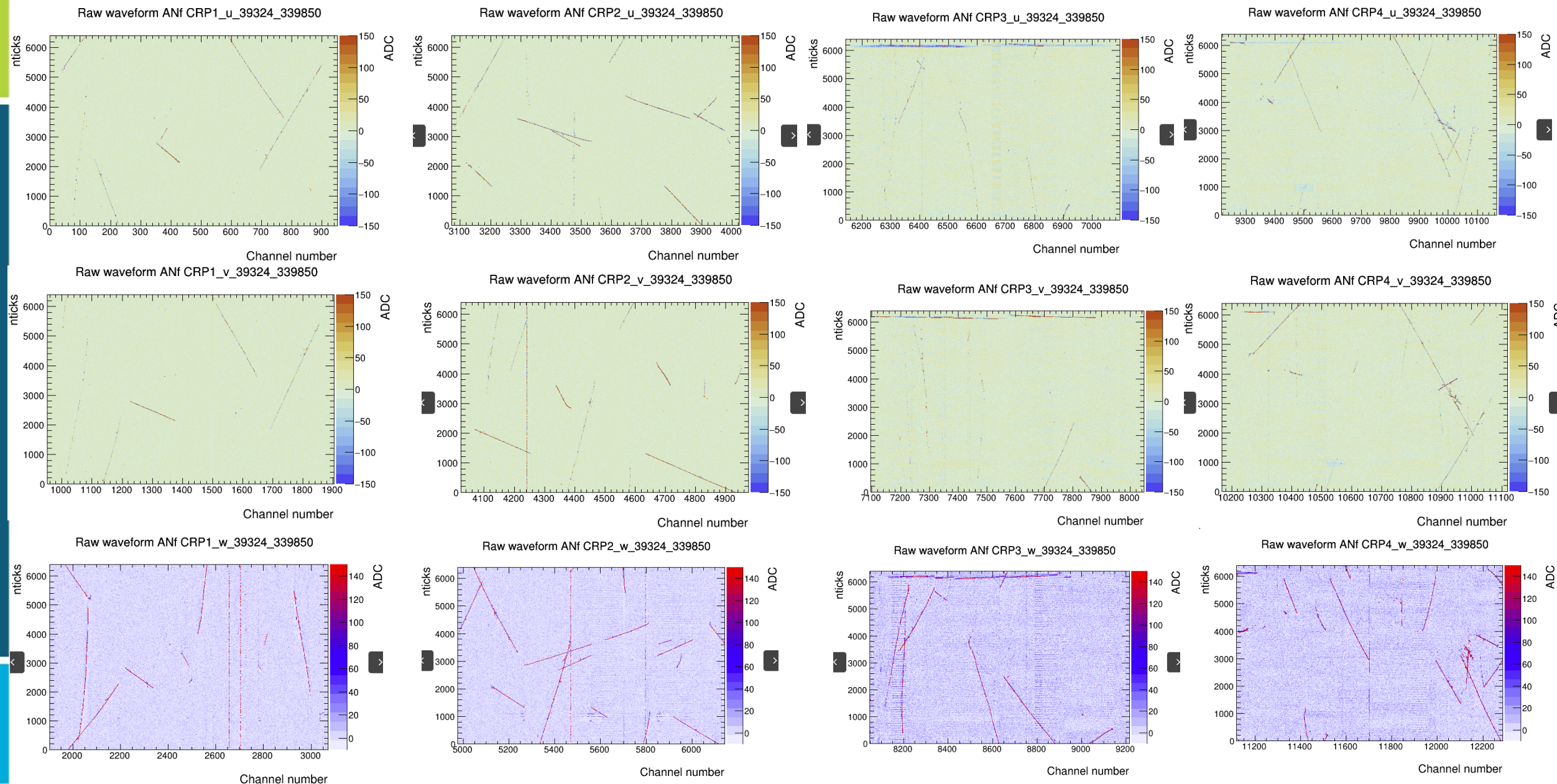


Noise filter in PDVD data

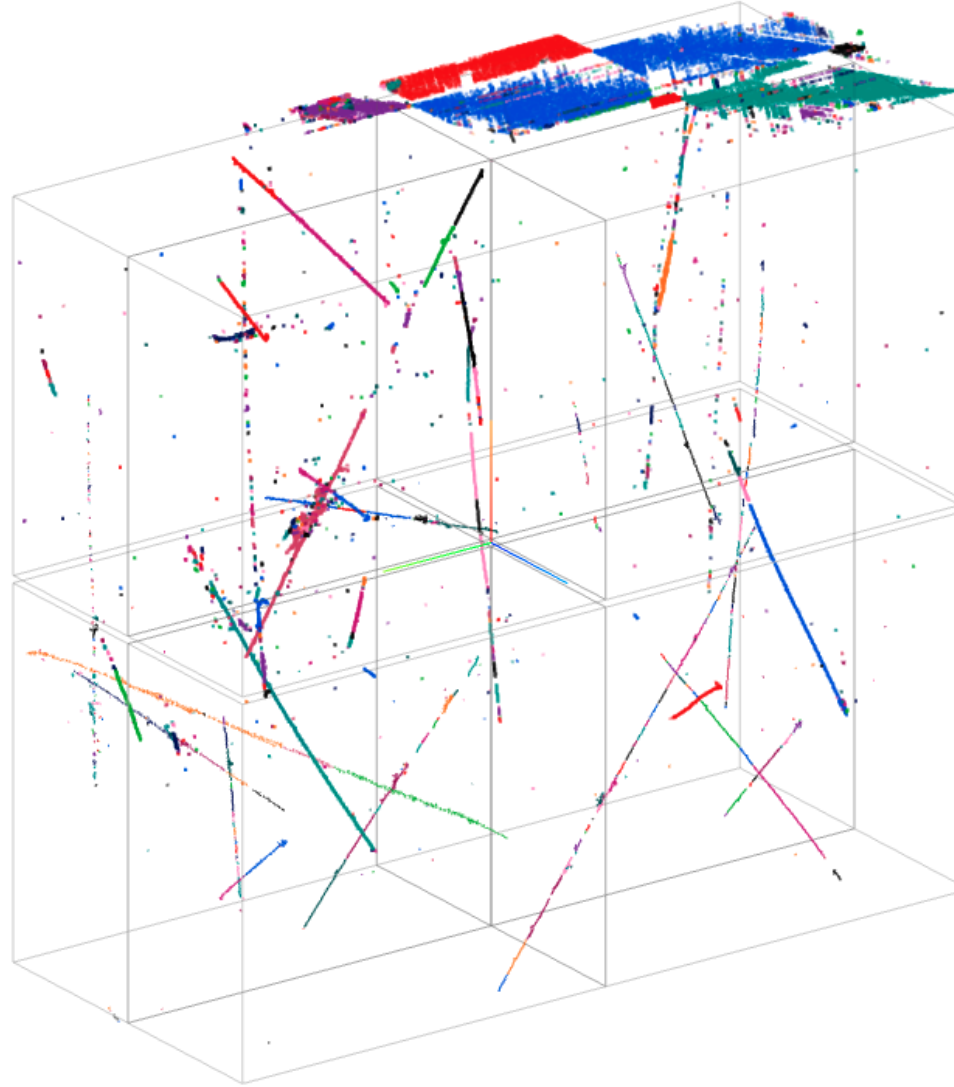
Xuyang Ning

Raw waveform; after noise filter



An Imaging example:

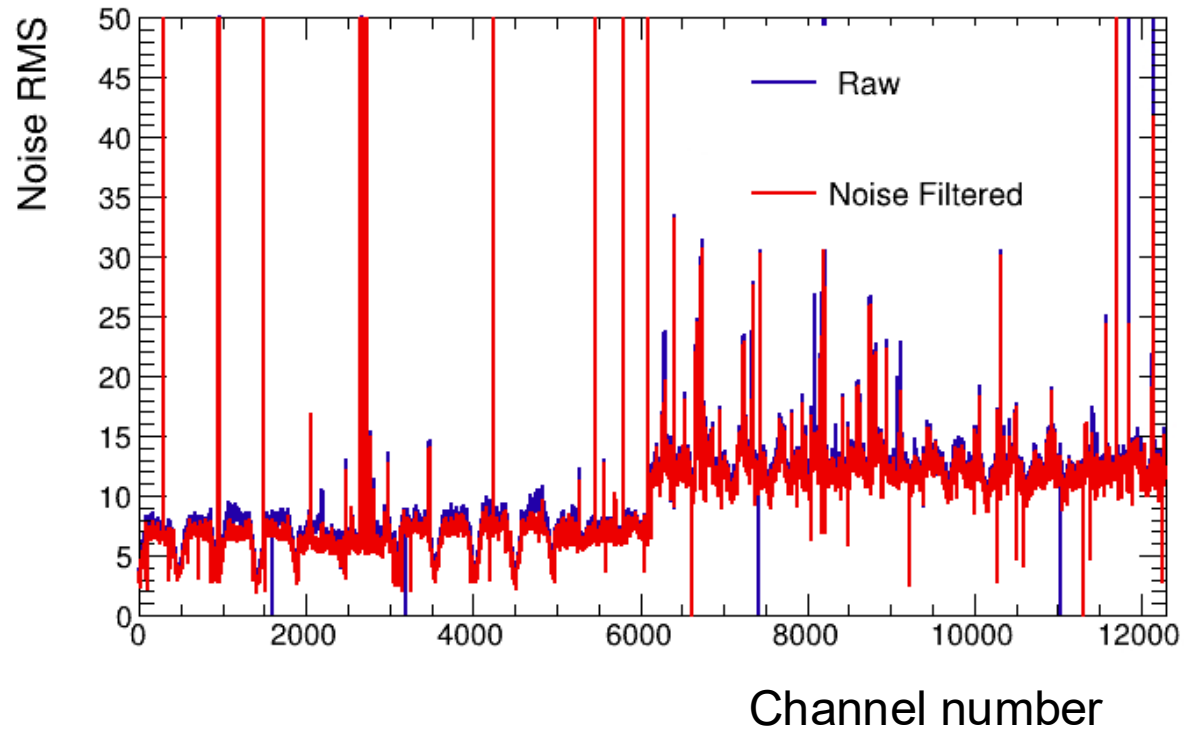
- Lots of prolonged tracks
- might be challenging for signal processing



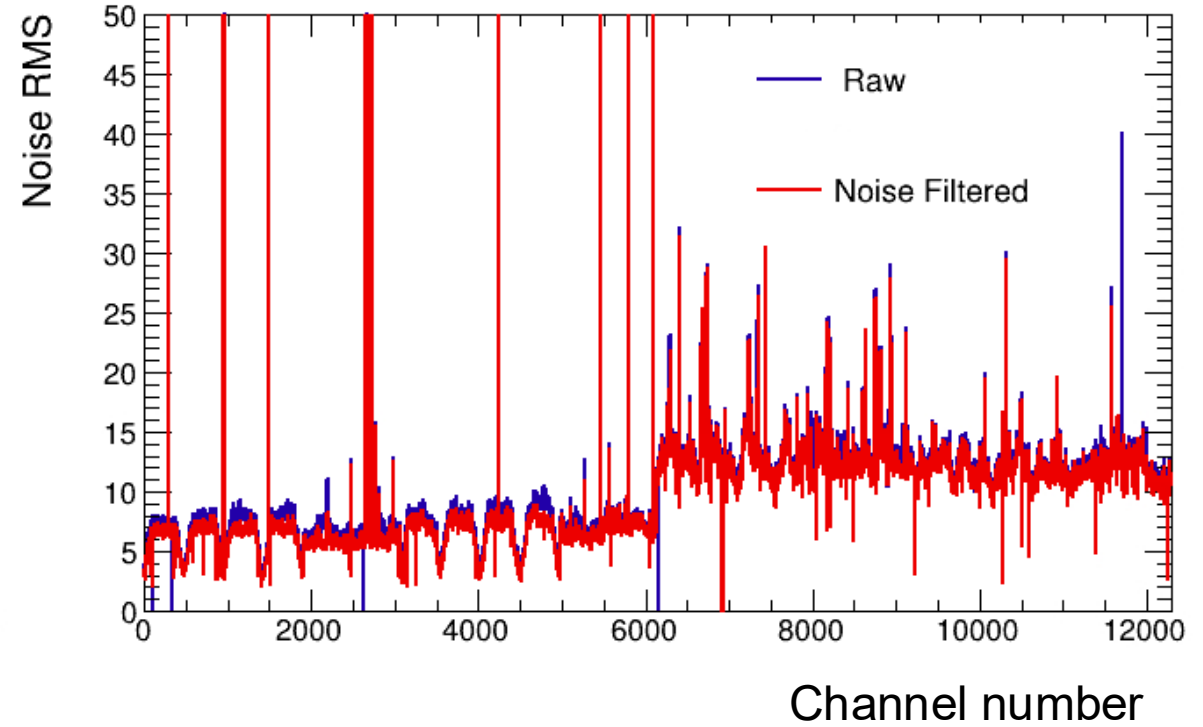
<https://www.phy.bnl.gov/twister/bee/set/c5329622-8ed2-4e37-ada6-5eb81360ec66/event/0/>

RMS

Run 39324; evt 339850

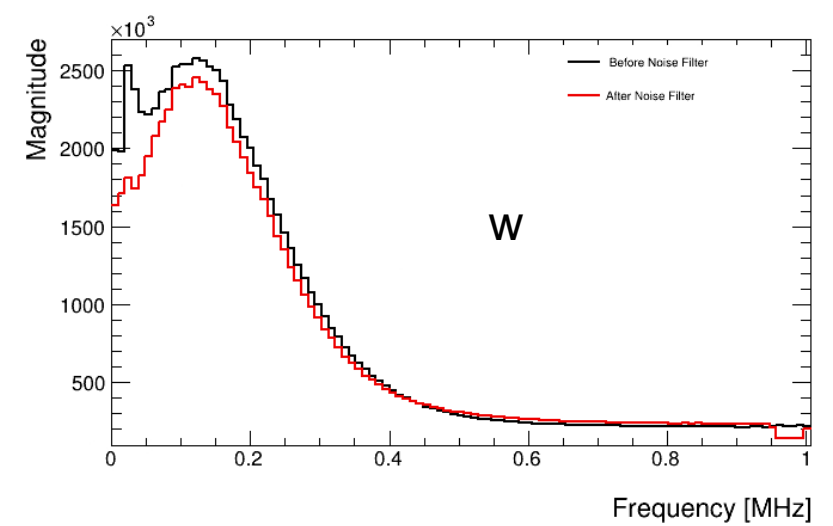
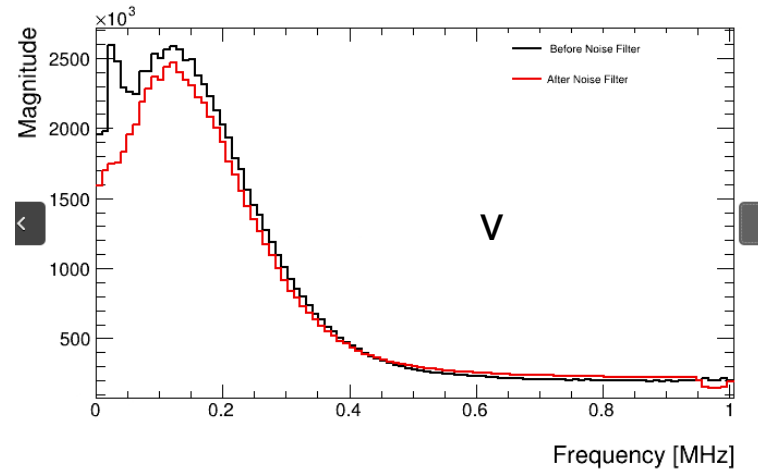
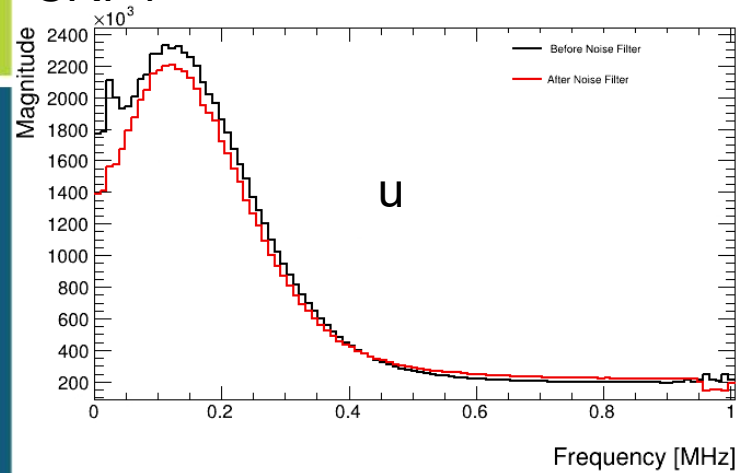


Run 39324; evt 339870

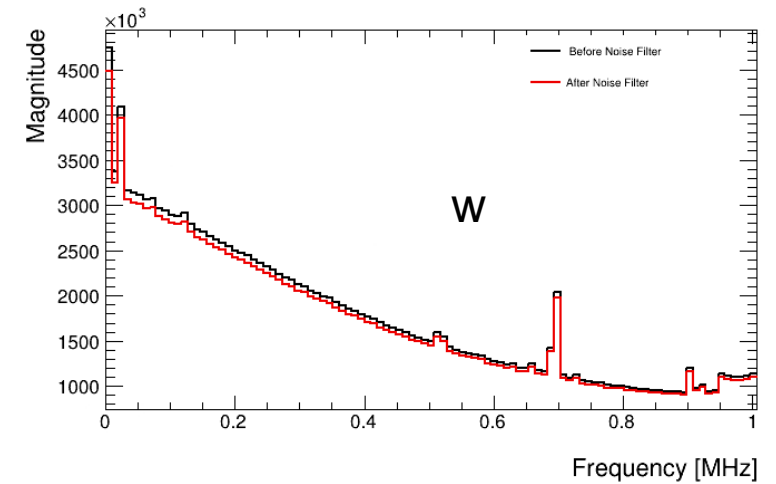
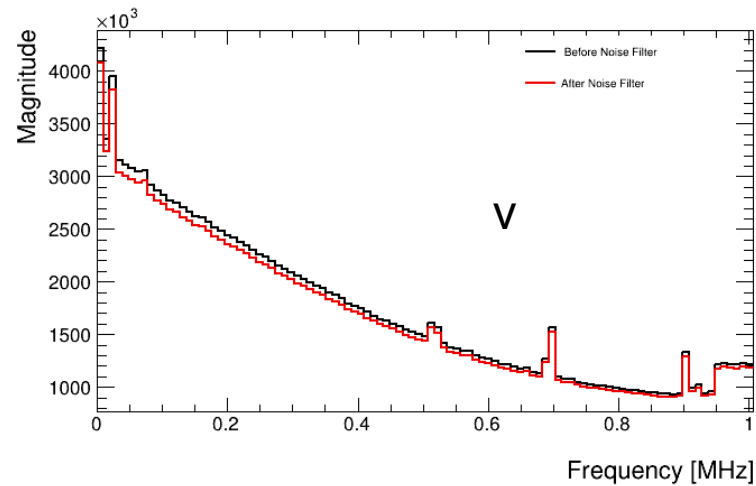
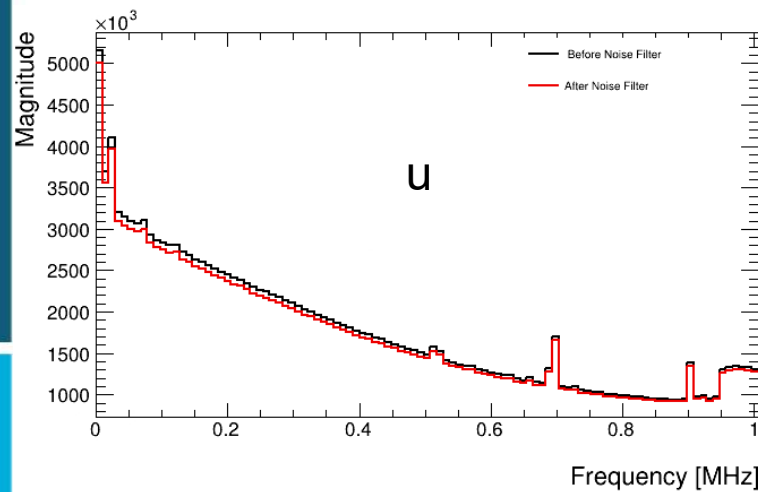


Frequency noise spectra

CRP1

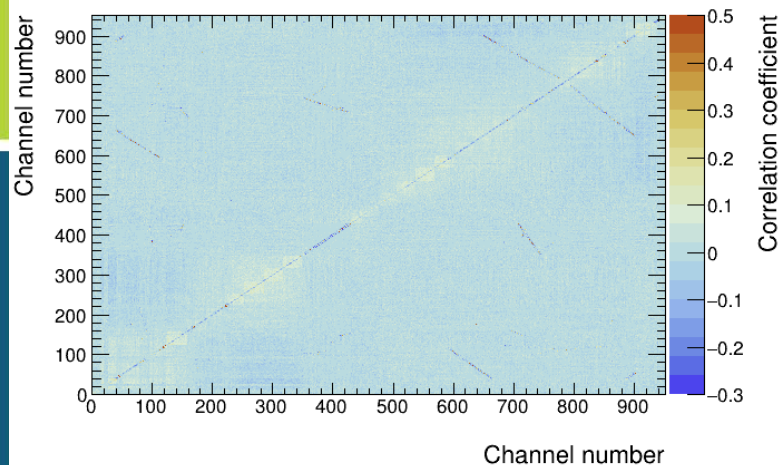


CRP3

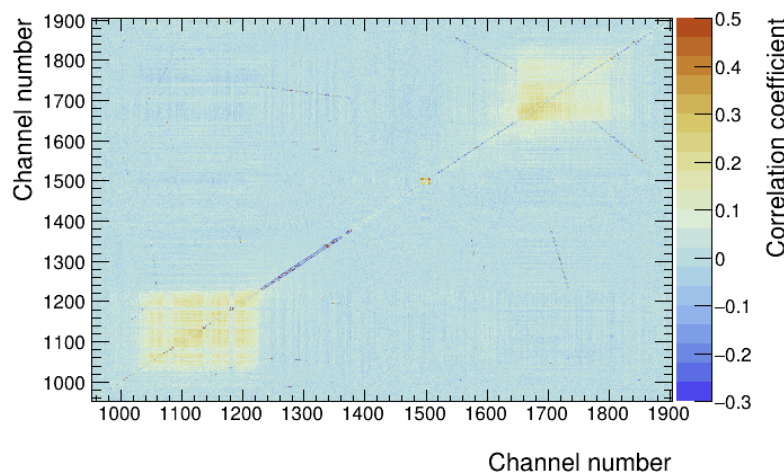


Correlation coefficient; CRP1

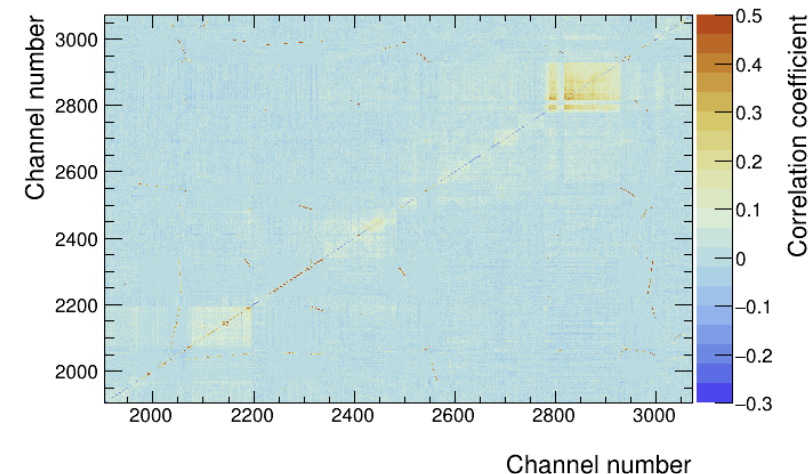
correlation -- CRP1 u planeori



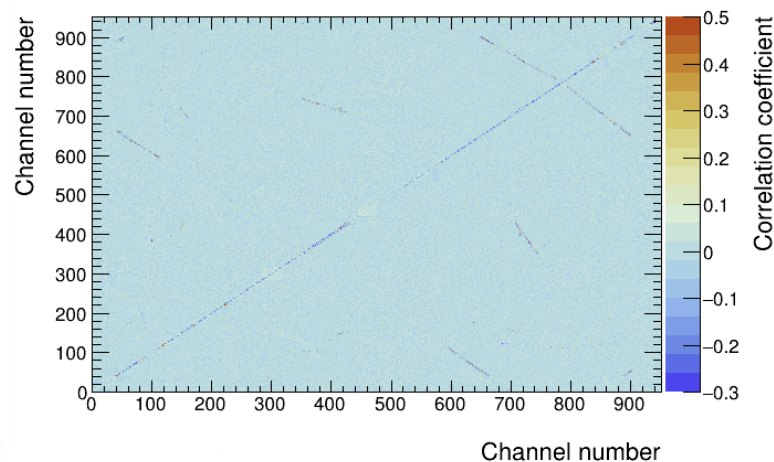
correlation -- CRP1 v planeori



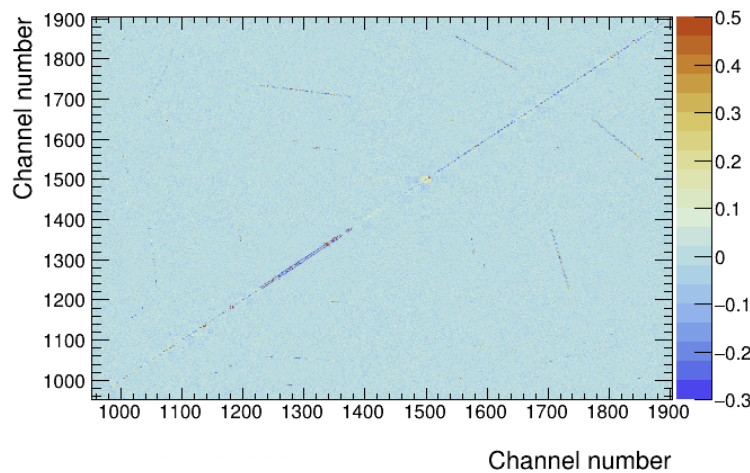
correlation -- CRP1 w planeori



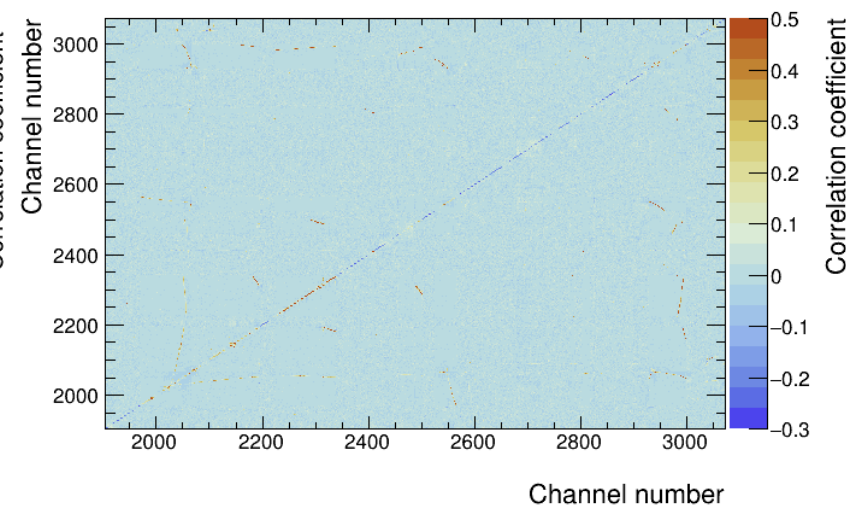
correlation -- CRP1 u planeANf



correlation -- CRP1 v planeANf



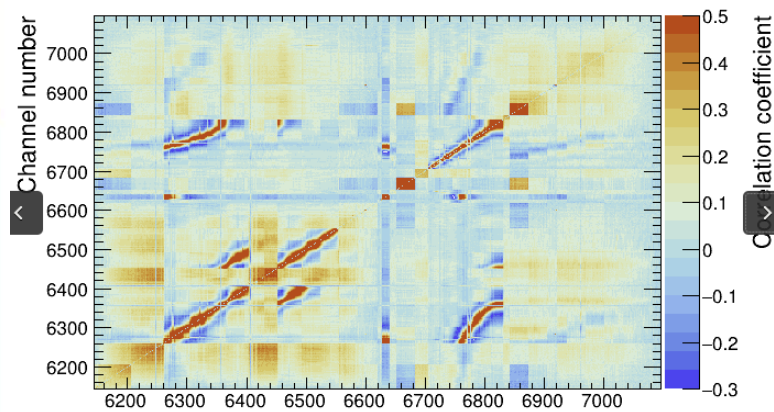
correlation -- CRP1 w planeANf



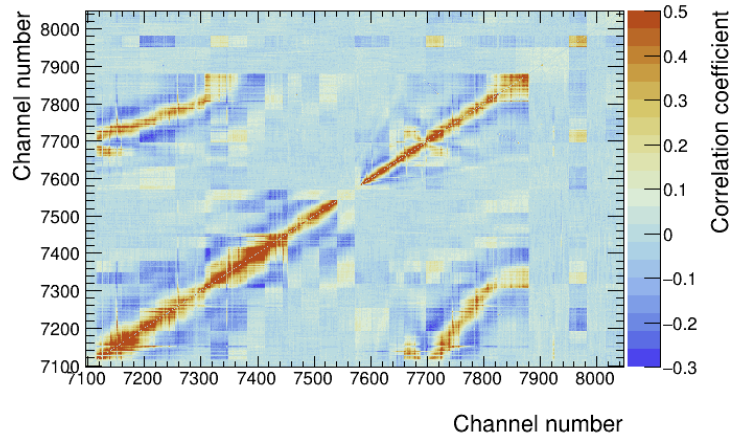
For Bottom CRPs looks fine, at least it is working. Some residual coherent noise found, I'll check in details.

correlation coefficient; CRP3

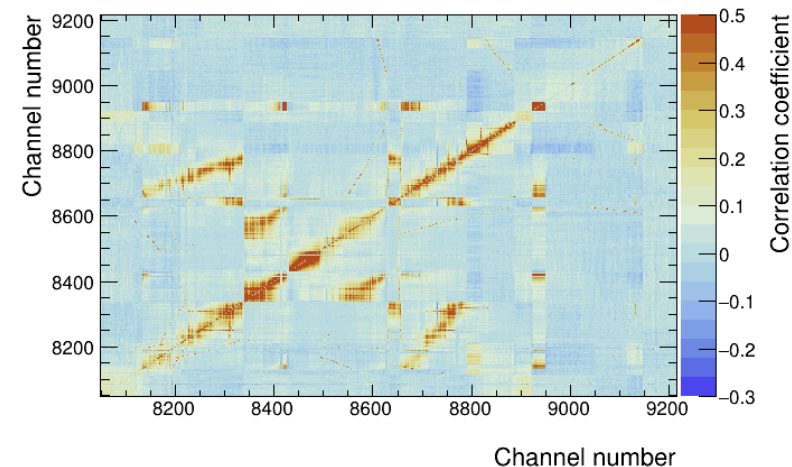
correlation -- CRP3 u planeori



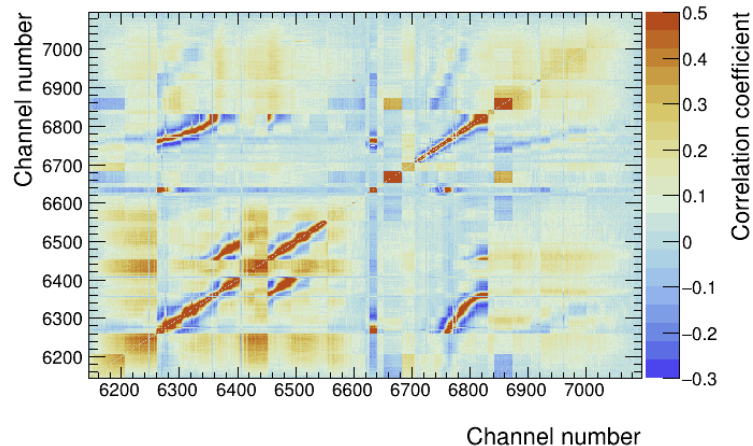
correlation -- CRP3 v planeori



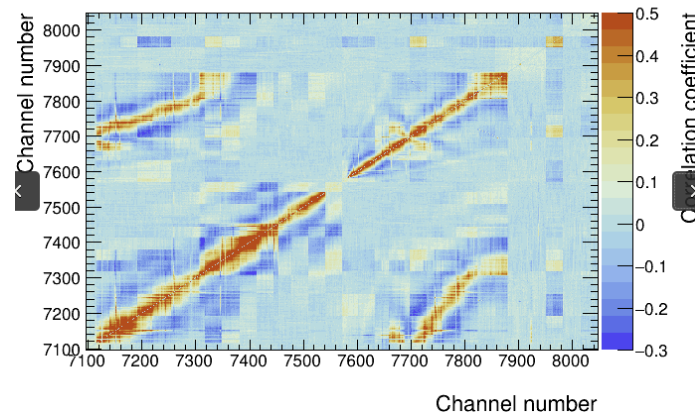
correlation -- CRP3 w planeori



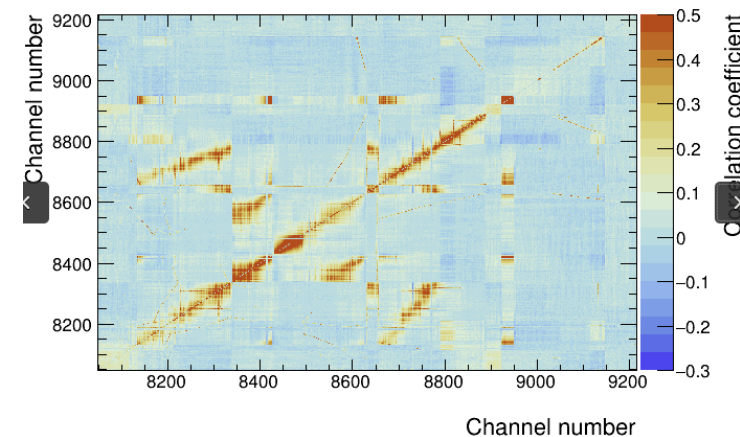
correlation -- CRP3 u planeANf



correlation -- CRP3 v planeANf

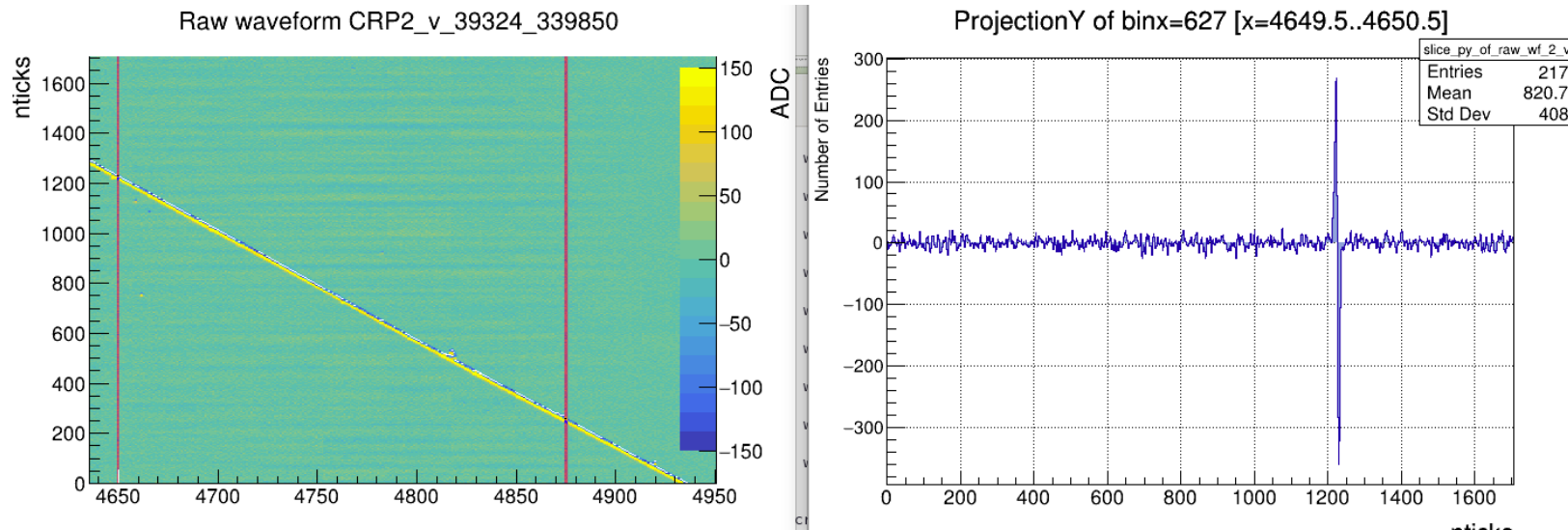


correlation -- CRP3 w planeANf



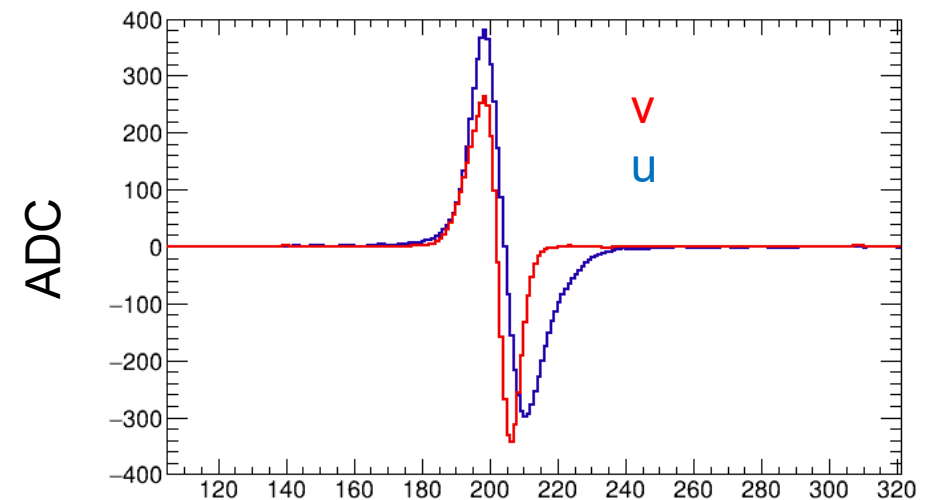
For Top CRPs, not work well. Need to check in details,
maybe need to group channels according to mapping

Waveform shape check; CRP2

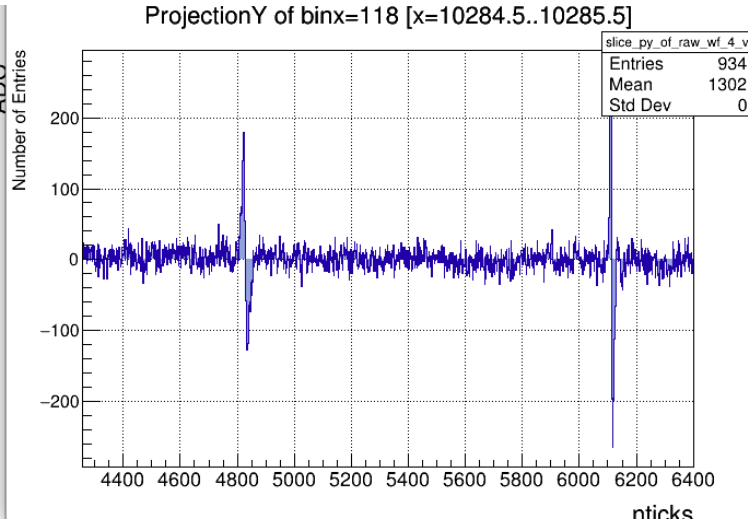
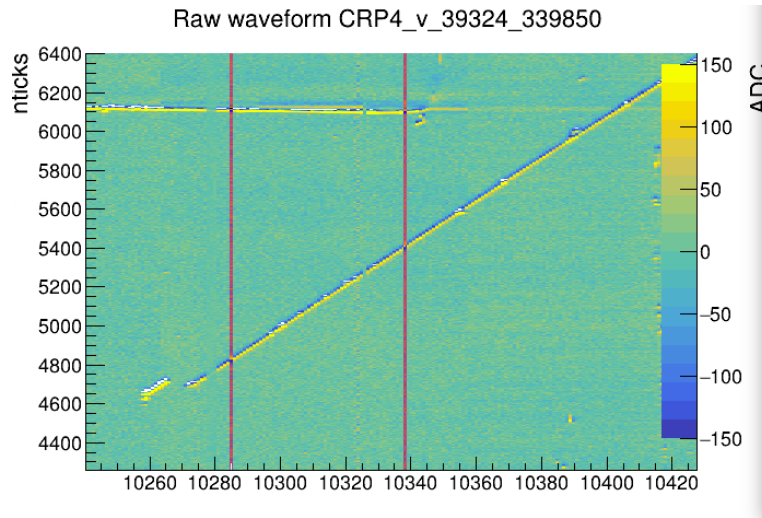


time: 1100,0;300
channel: 4649,4913

Select a clean cosmic track;
before noise filter applied;
averaged waveform:
align signal according to the peak in each channel

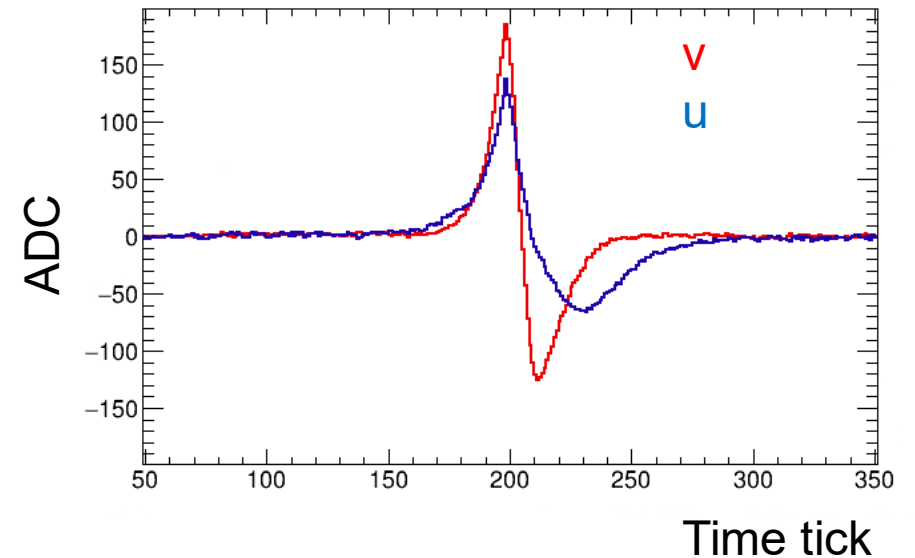


Waveform shape check; CRP4



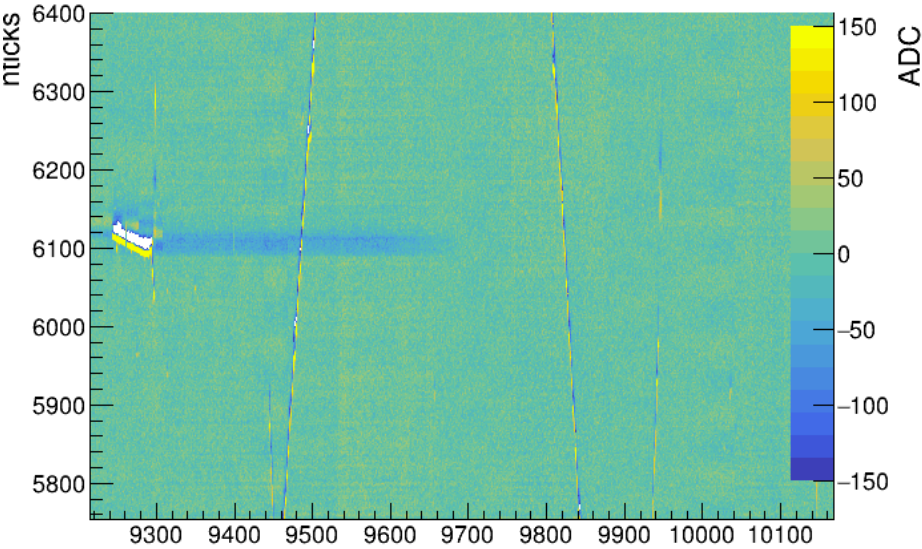
time: 4700,5800;300
channel: 10284,10385

Select a clean cosmic track;
before noise filter applied;
averaged waveform:
align signal according to the peak in each channel

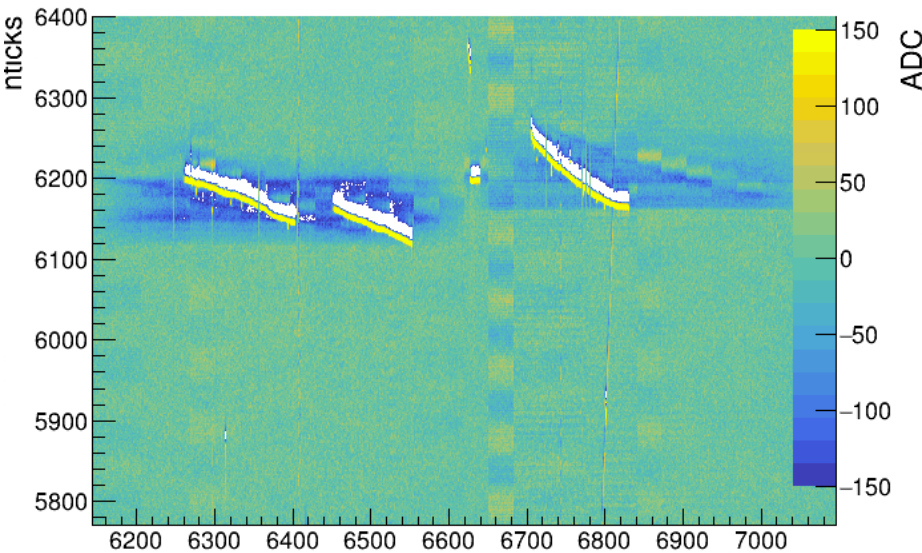


Some other strange waveform

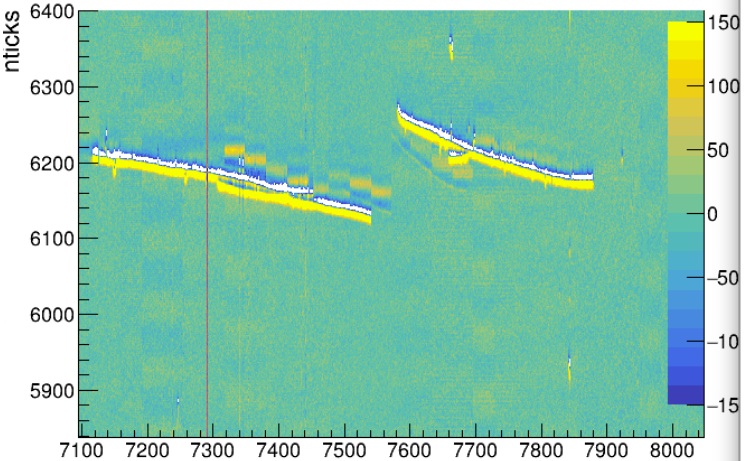
Raw waveform CRP4_u_39324_339850



Raw waveform CRP3_u_39324_339850



Raw waveform CRP3_v_39324_339850



ProjectionY of binx=197 [x=7291.5..7292.5]

