Single processing check in PDVD

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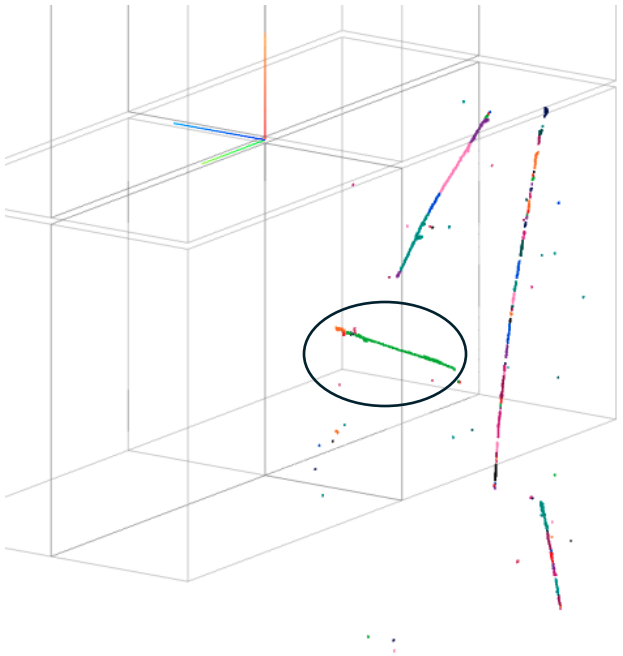
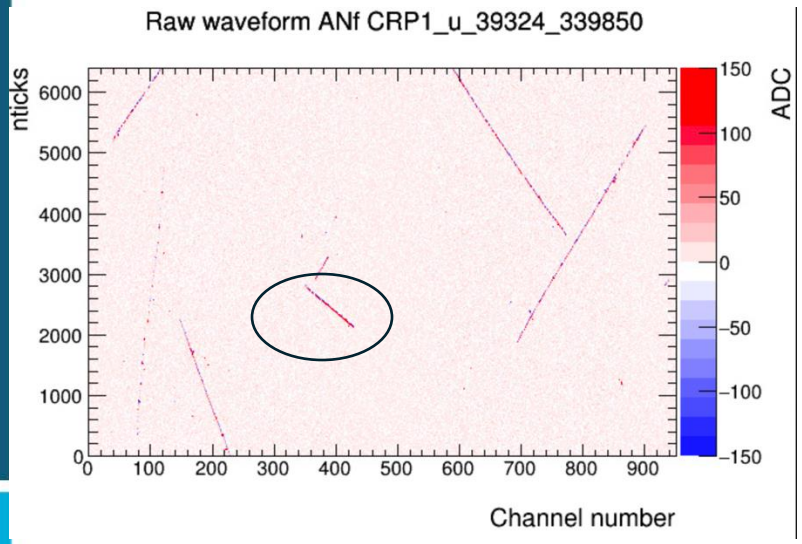
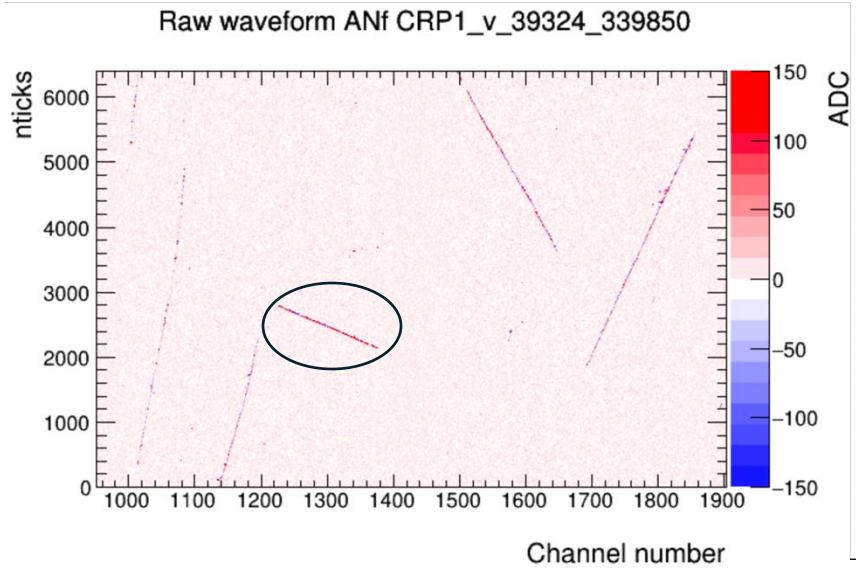
Signal shape check; BDE

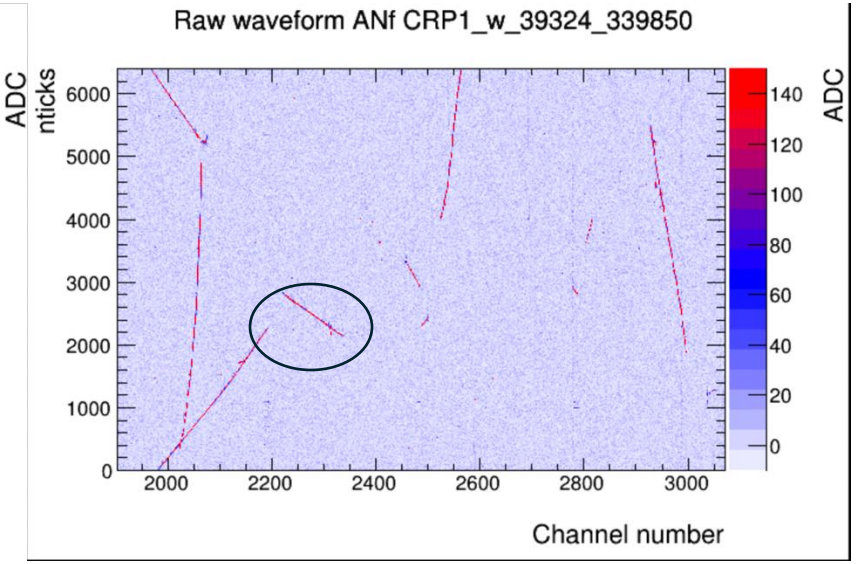
- Select suitable track from data;
- derived direction from imaging



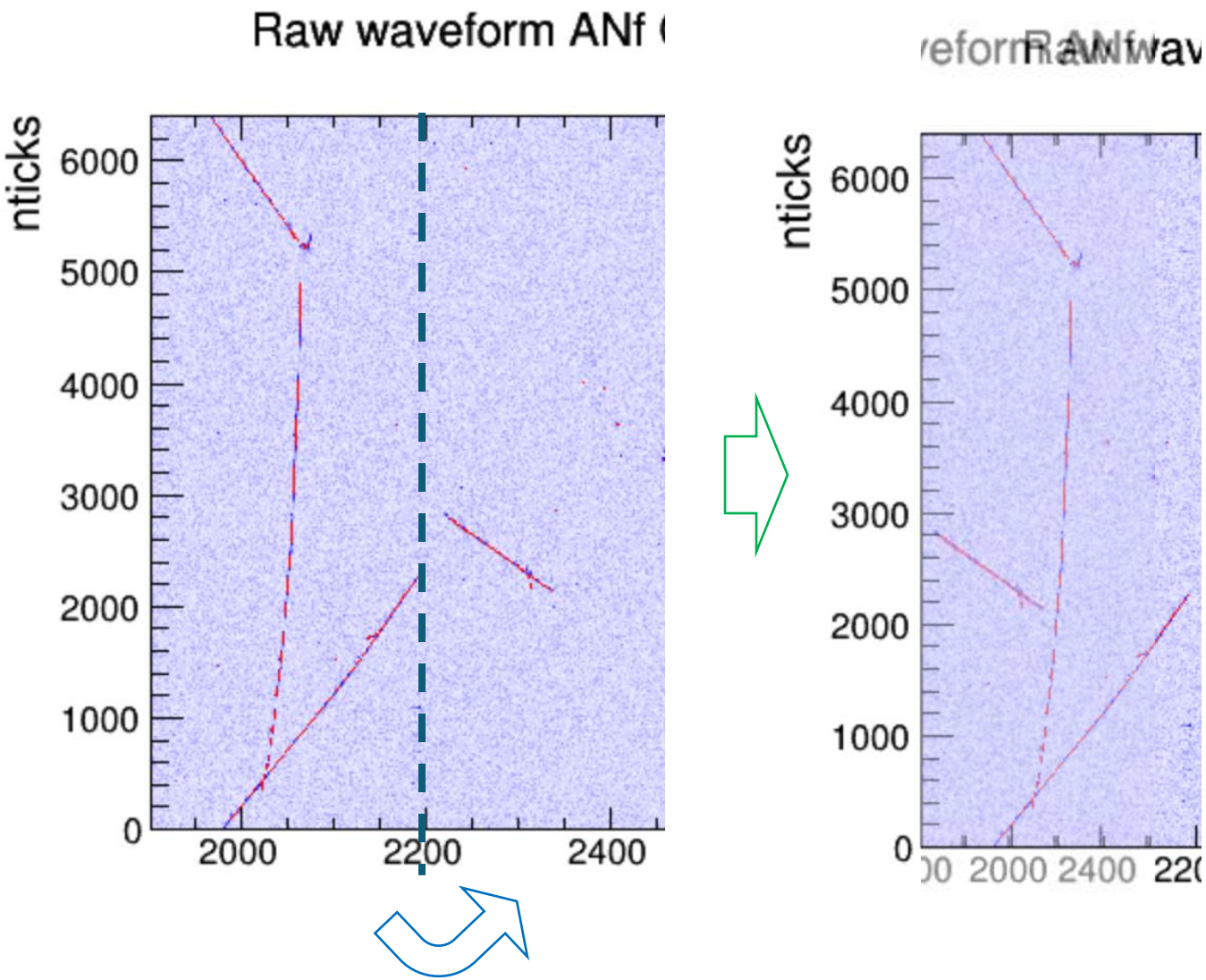
https://www.phy.bnl.gov/twister/bee/set/0e424071-798a-4141-92e9-a070ec926be1/event/0/



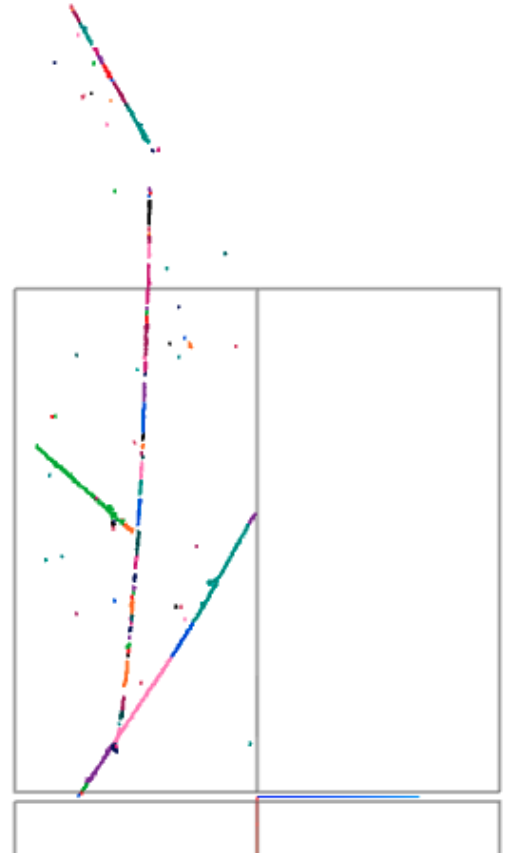




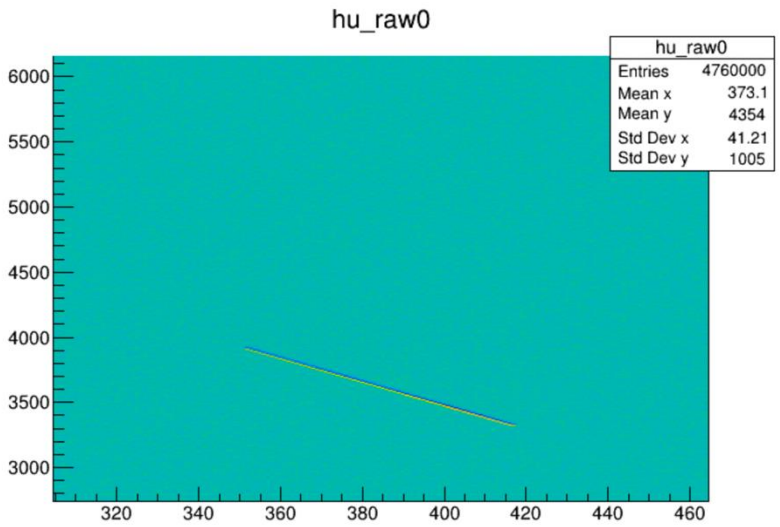
How to see w projection in imaging

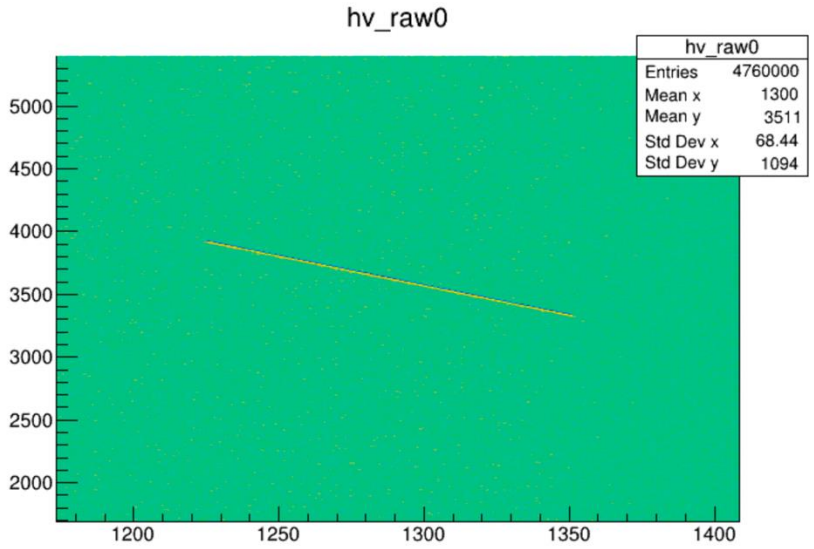


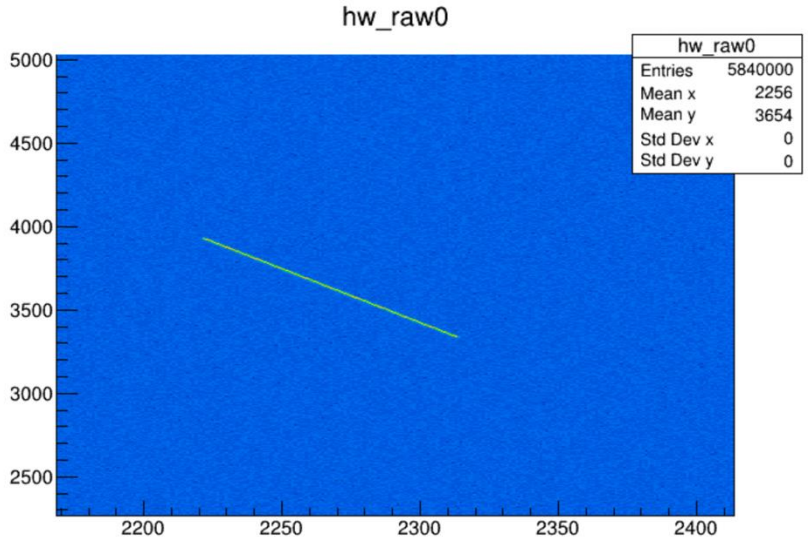
overlap these two parts



Simulate track in same direction





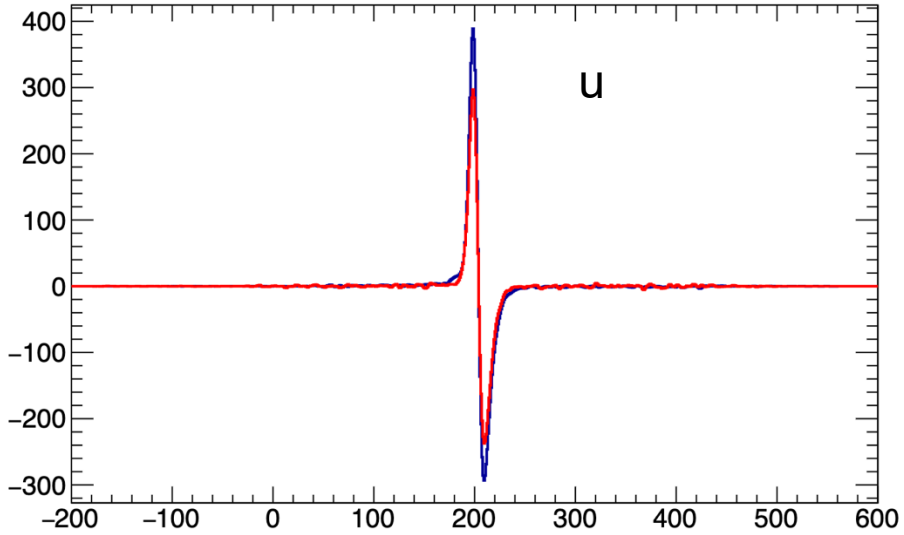


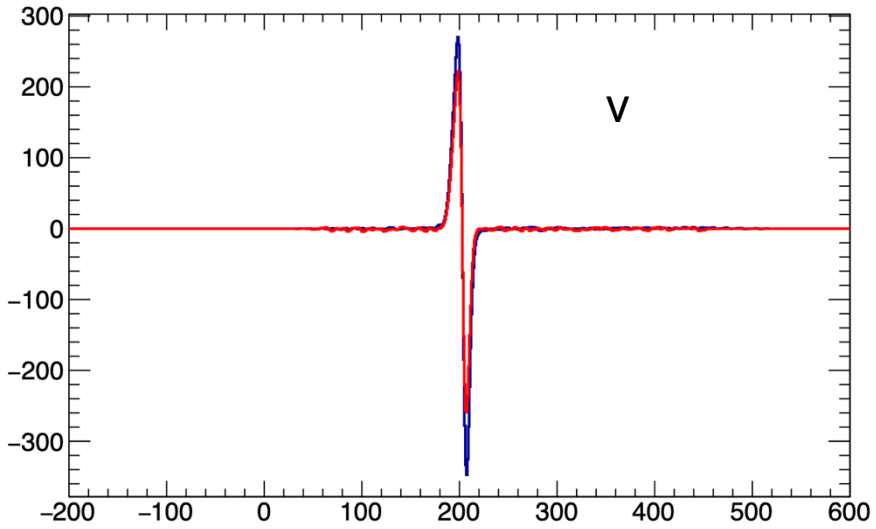
Simulate a MIP track in standalone wct simulation;
x axis is random.
start: (-116.7, -102.4, 13.4)
end: (-272.9, -17.5, 60.4)

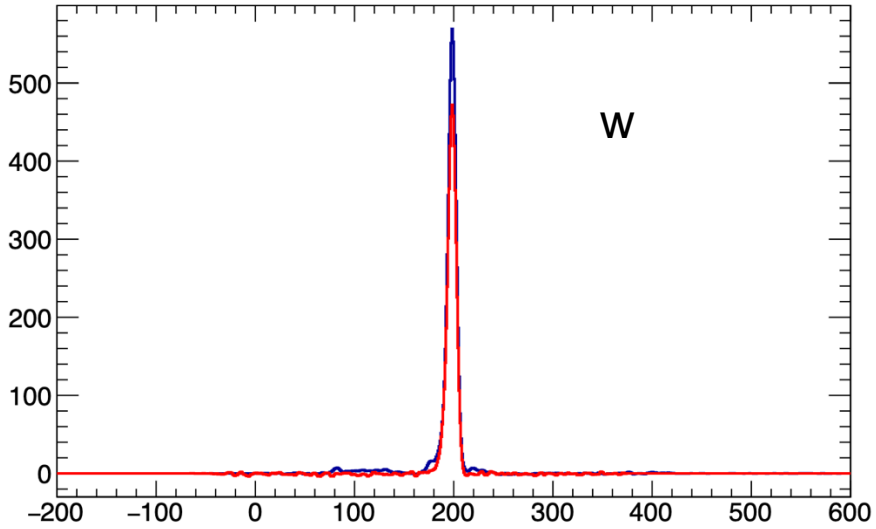
Shape compare for Bottom:

BDE field response; shield plane - 1.4kV;
Averaged waveform for both data and simulation, aligned by the peak.

data
simulation



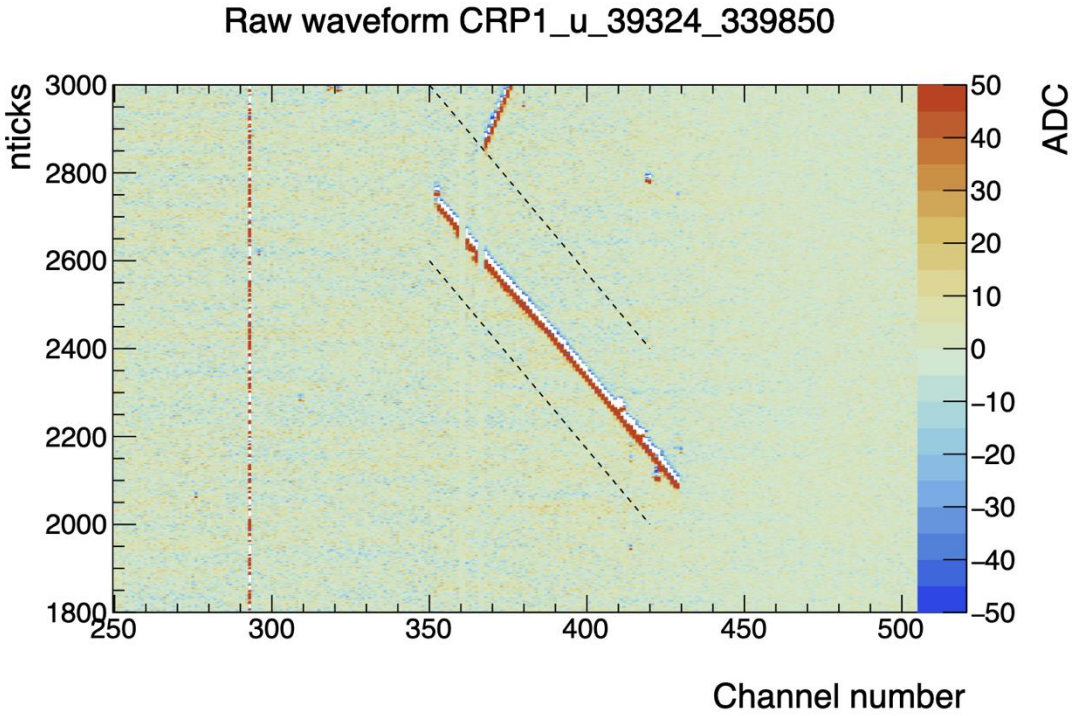




On going

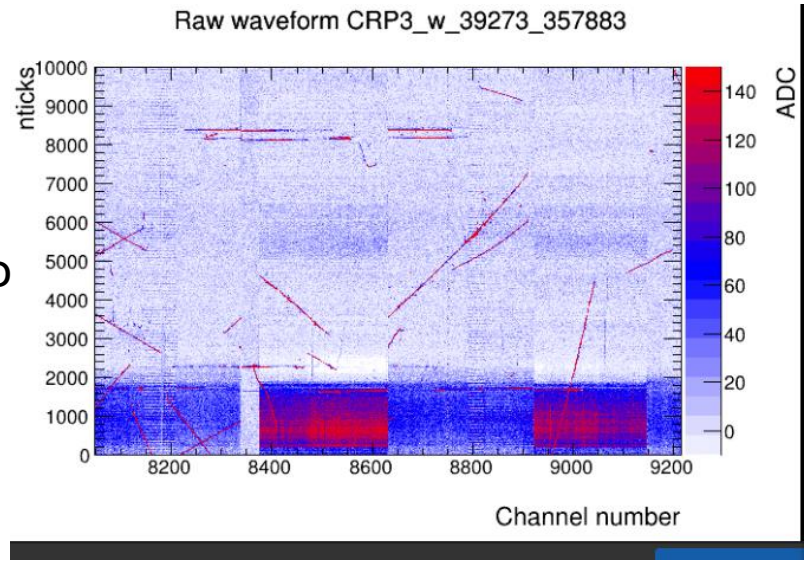
- Include noise filter to PDVD imaging pipeline
  - Didn’t include in default, problems happened when put it in; still debugging.
- Similar shape check for TDE with new field response.
  - Because of shield coupling noise on TDE, NF has to be included.
- Time alignment for new field response.

- Investigate gaps in signal processing.
  - prolonged tracks;
  - noisy or dead channels;
  - …

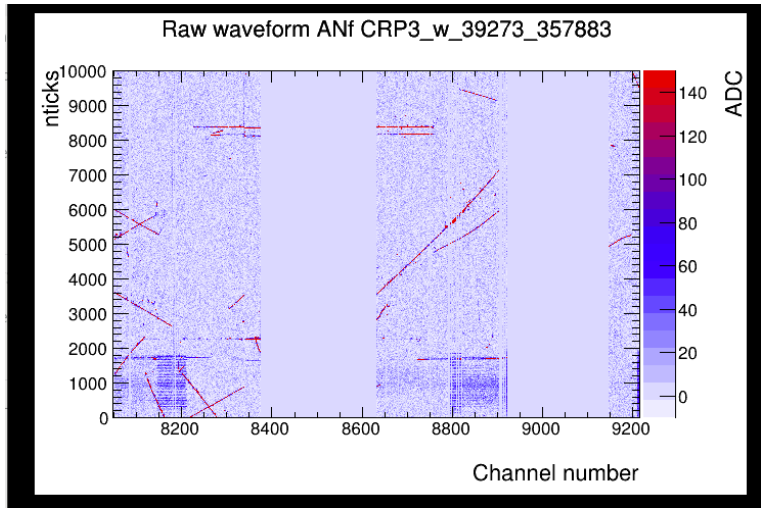


backup for a noisy case

A very noisy event like this:
its RMS can go up to 50;



If labeled as “noisy” by RMS cut



If not labeled as noisy, the decon result still seems reasonable.