

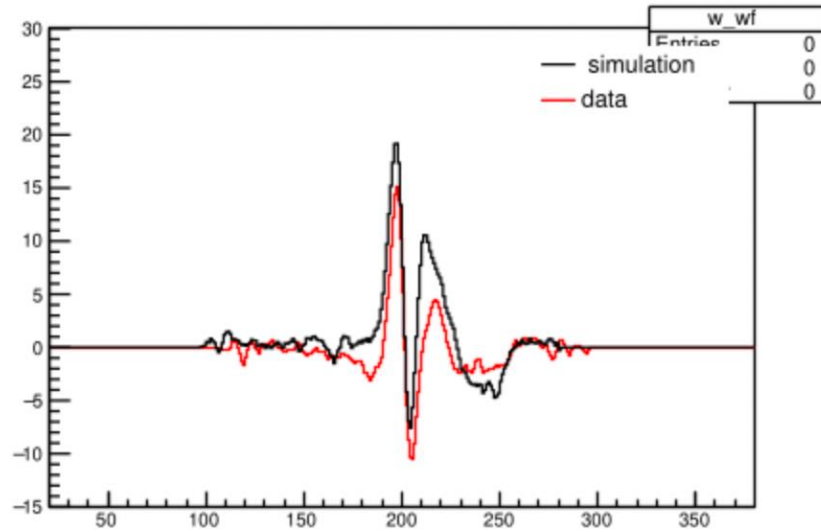
Field response check

Xuyang Ning & Wenqiang Gu

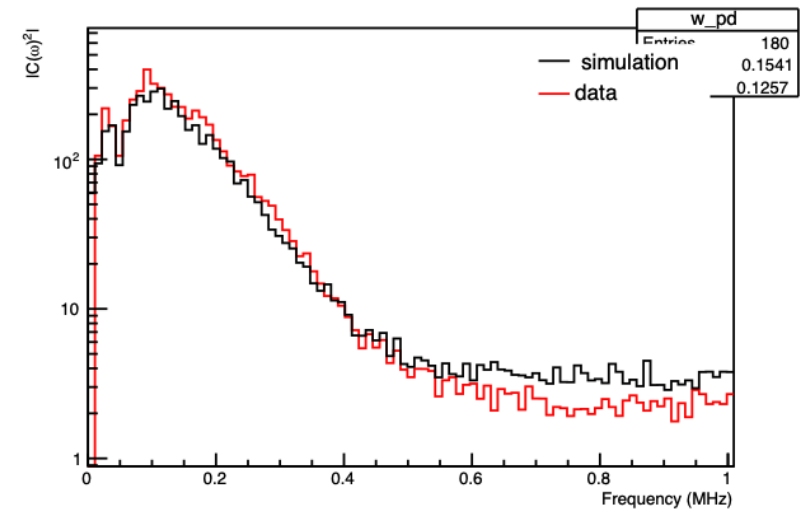
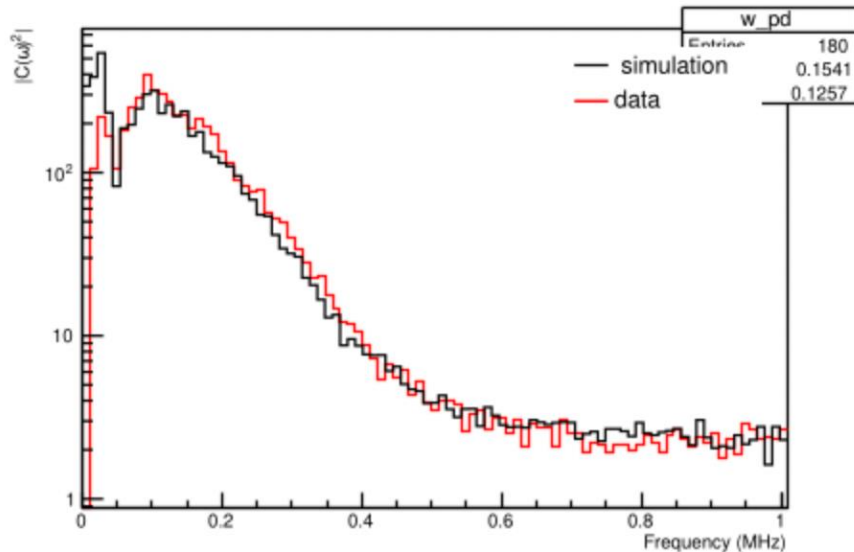
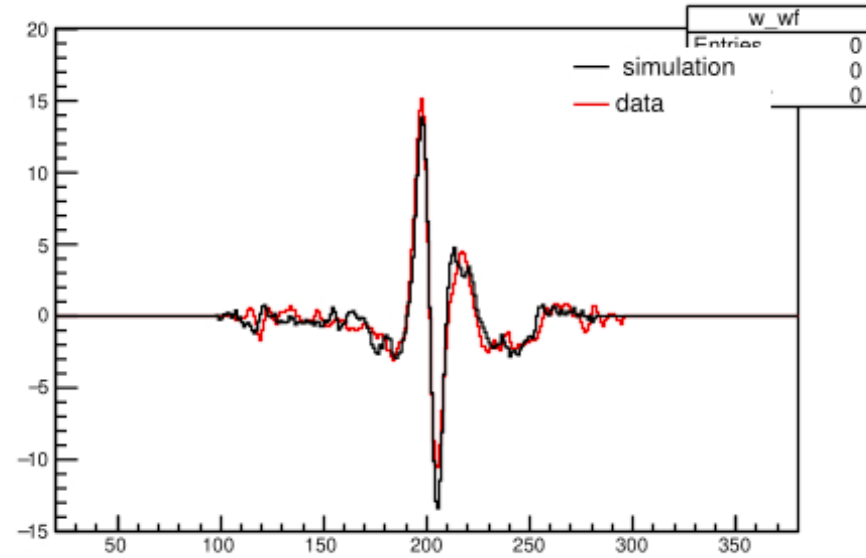
02/05/2025

Simulation w/ and w/o CNR

Coherent noise removal not applied

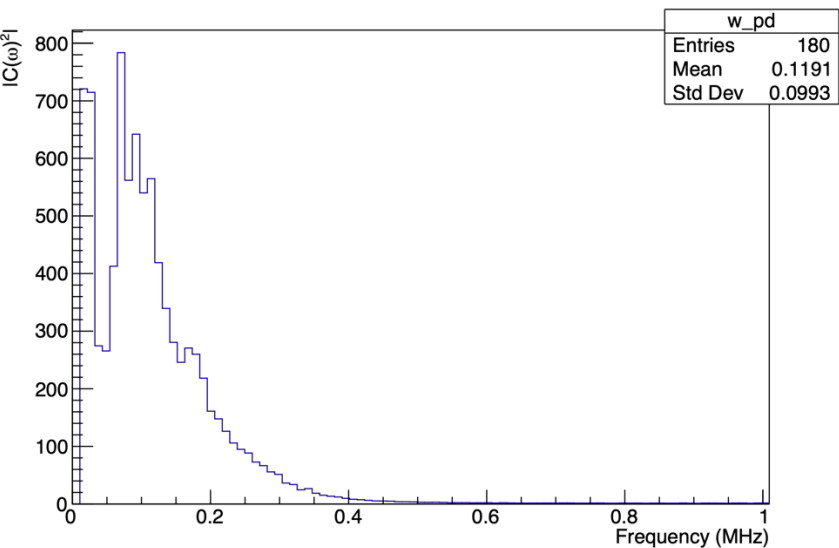
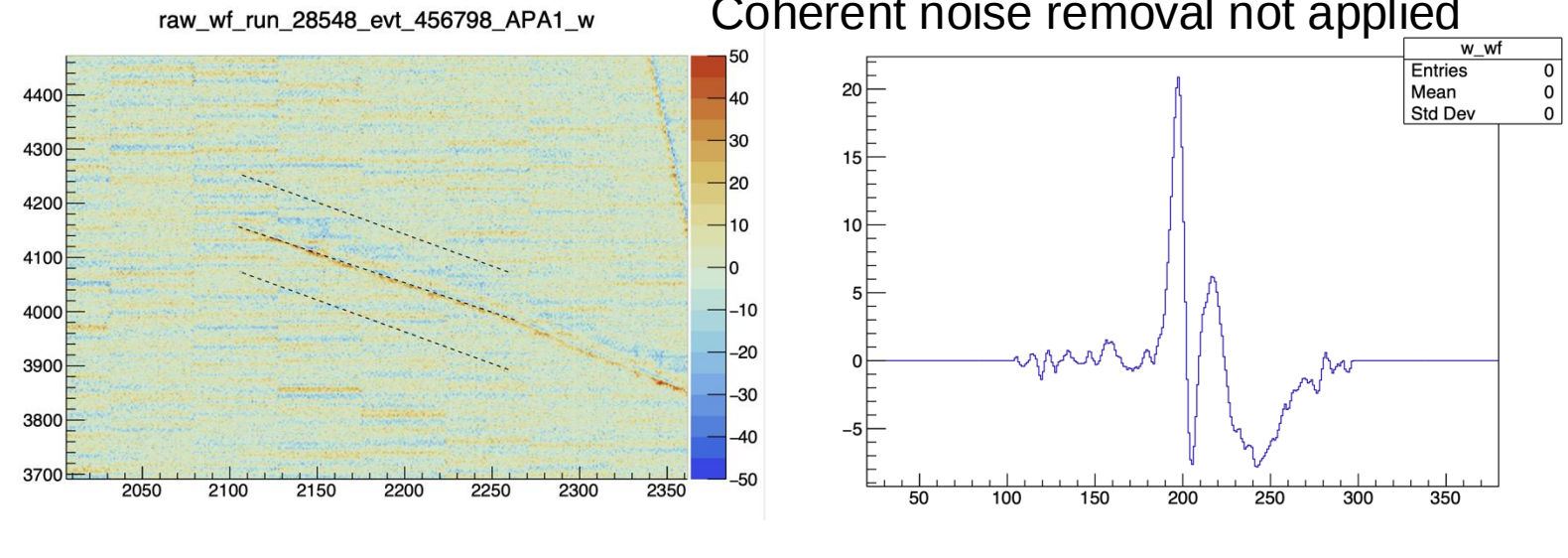


Coherent noise removal applied

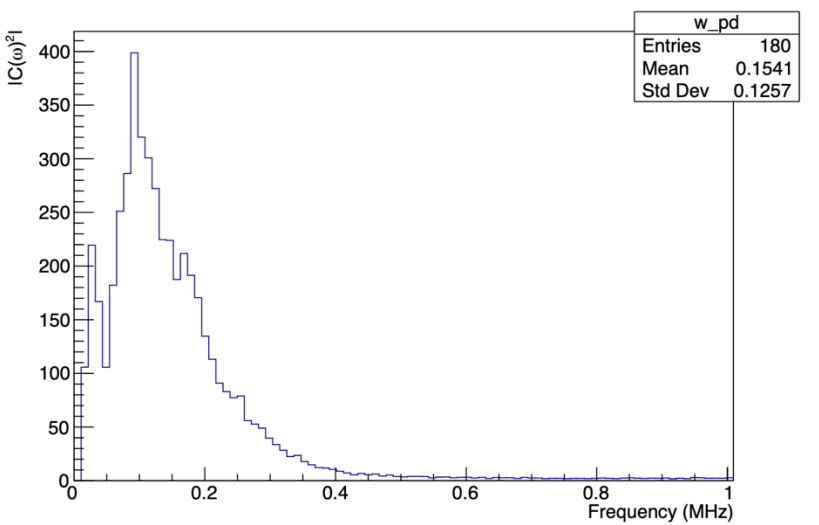
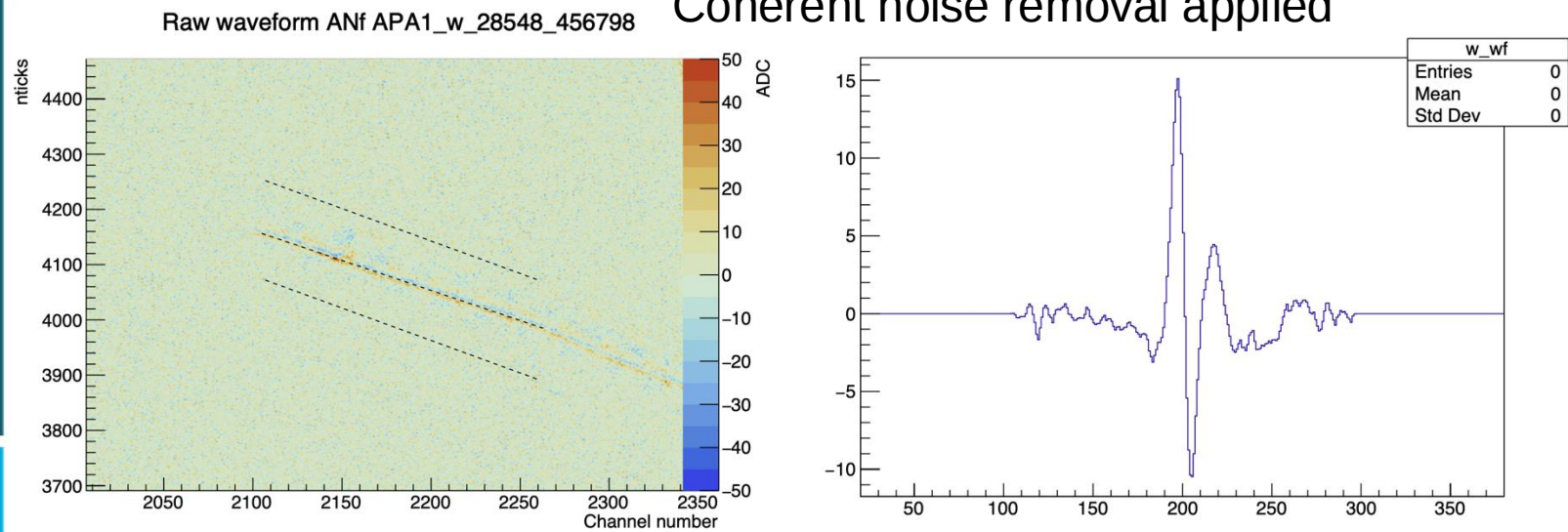


Data w/ and w/o CNR

Coherent noise removal not applied



Coherent noise removal applied



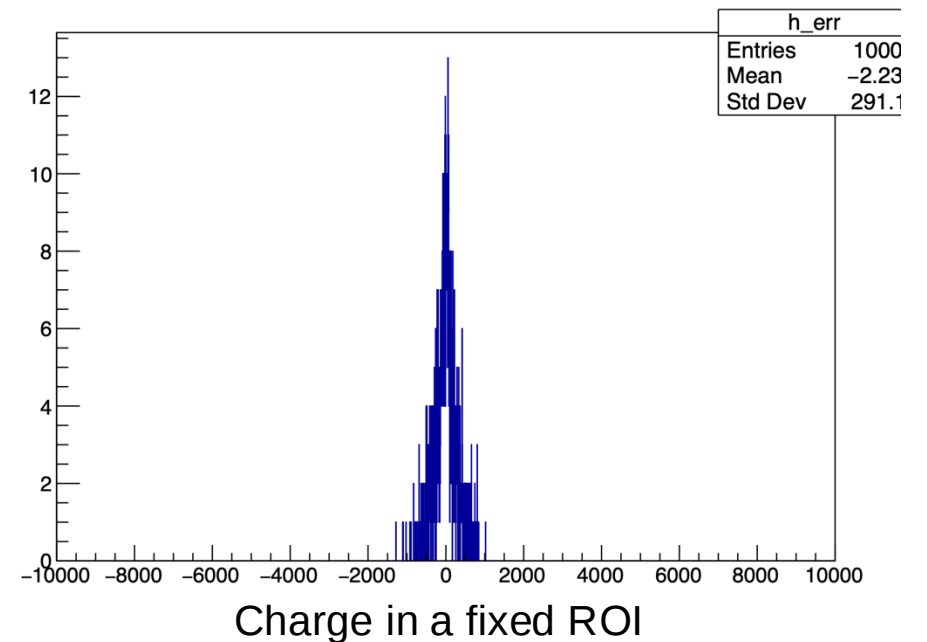
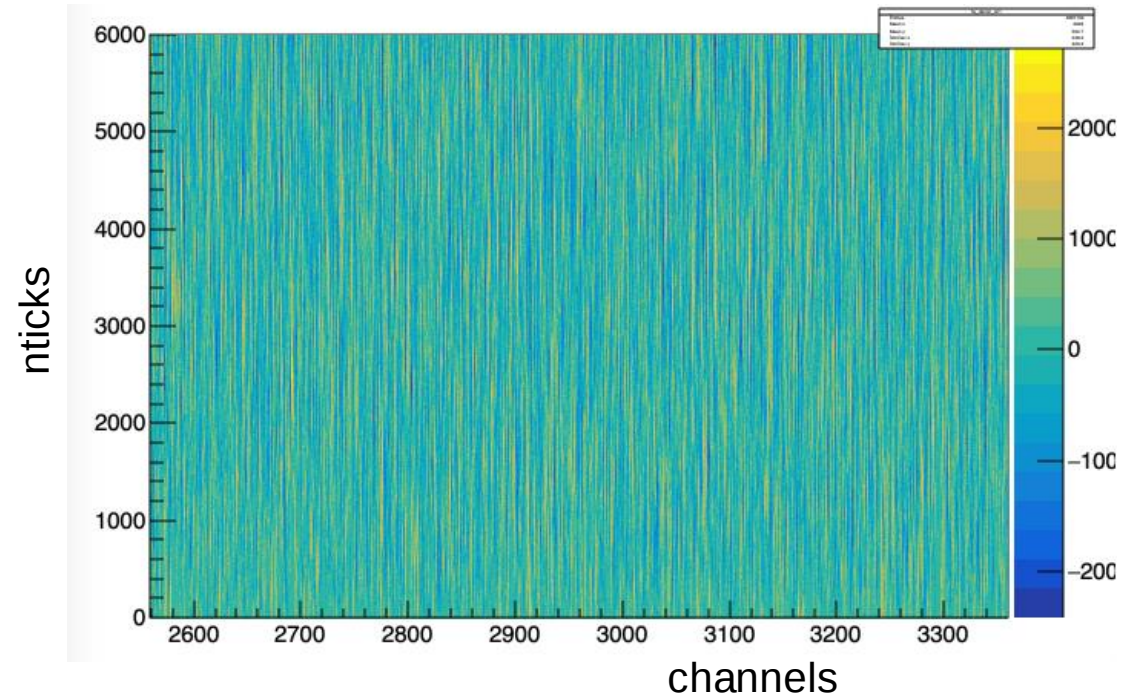
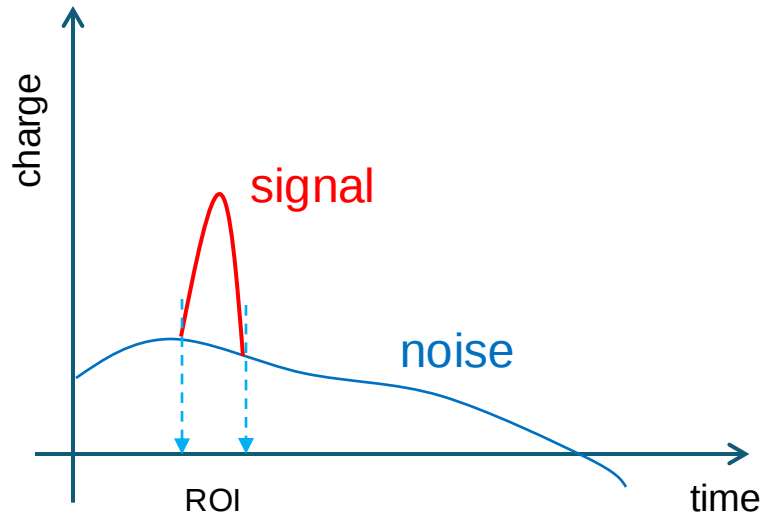
Signal processing and imaging validation

Xuyang Ning

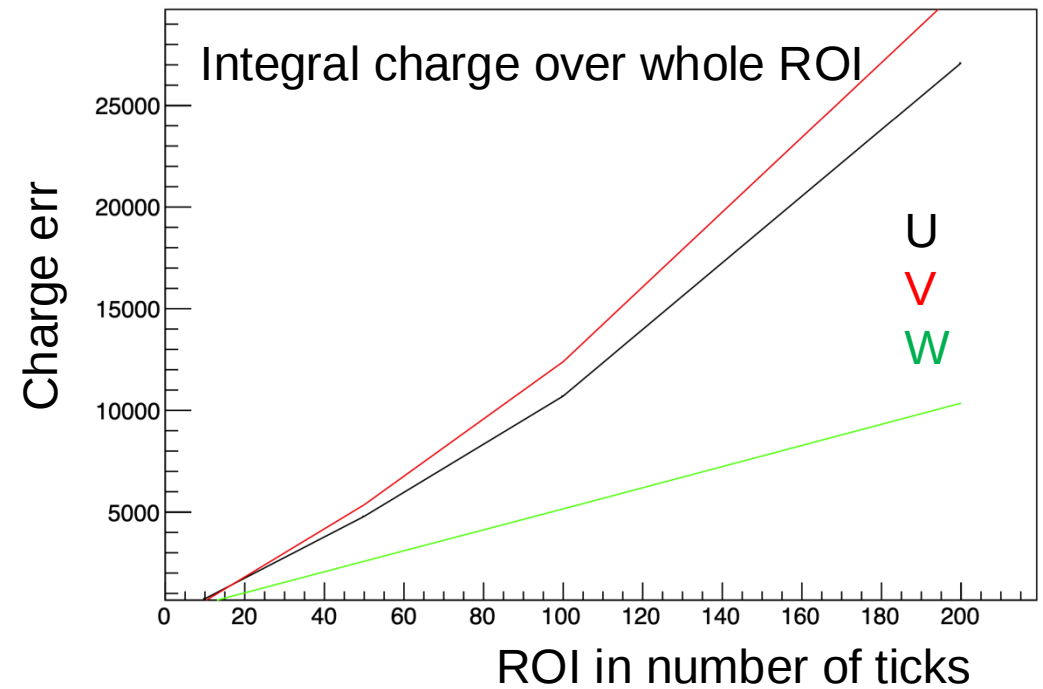
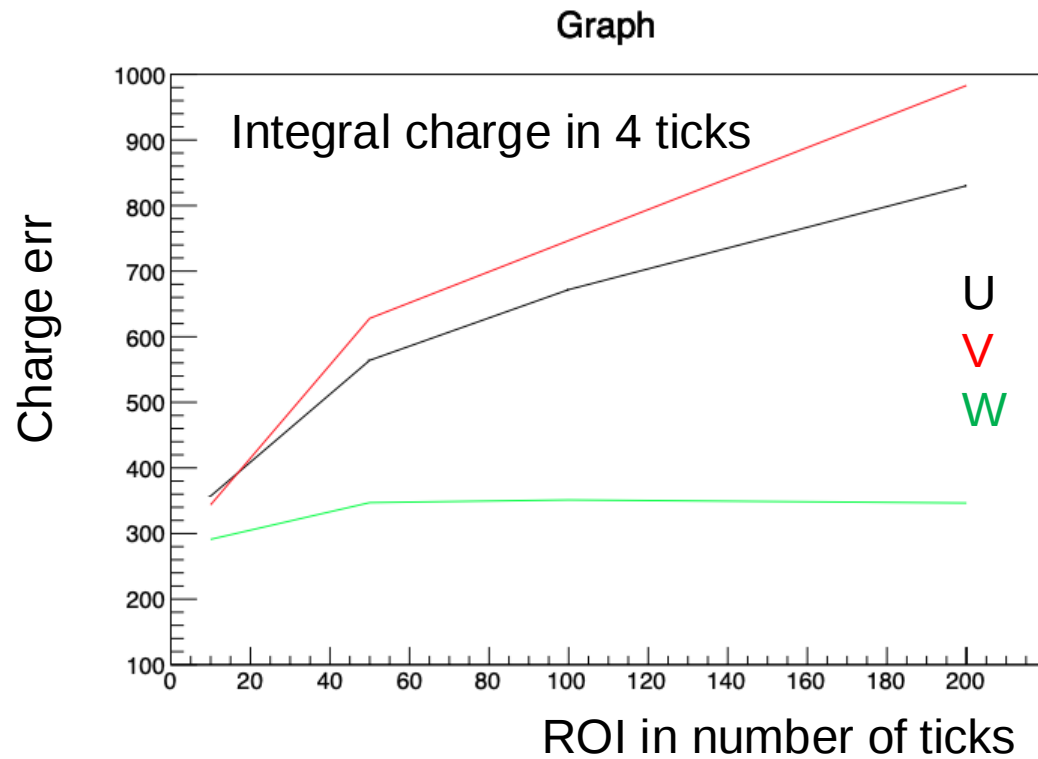
02/05/2025

Charge uncertainty

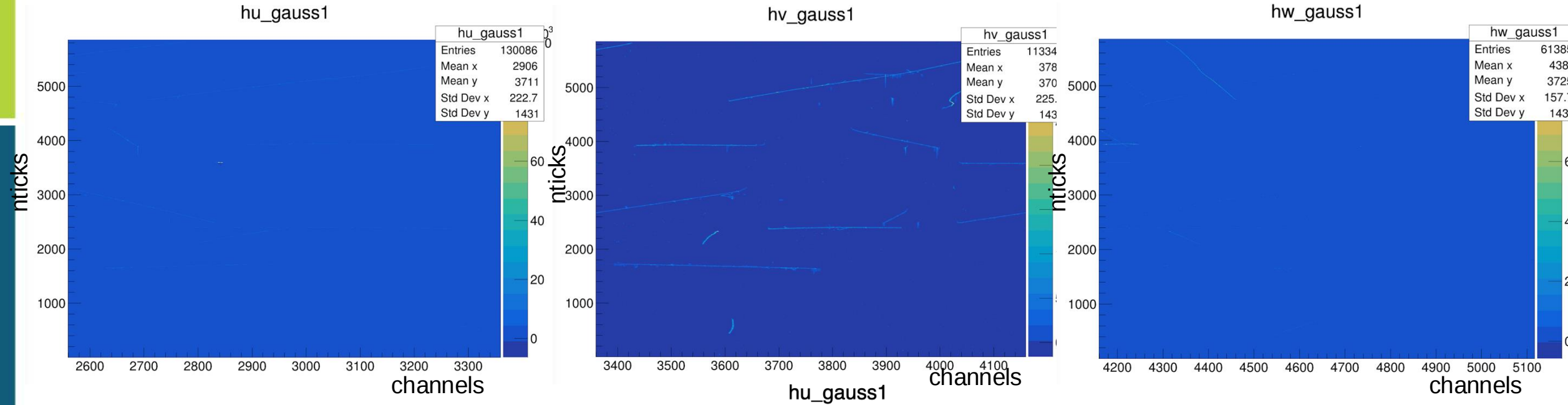
- Generate pure noise simulation with hd data noise model.
- Apply deconvolution, convert ADC to charge
- Apply high frequency gauss filter.
- For a fixed ROI range:
- Randomly pick ROI region in each plane
- Charge in each picked ROI region will be changed by the starting and the end points
- The uncertainty of the charge can be derived by the calculated charge distribution with a certain ROI in pure noise



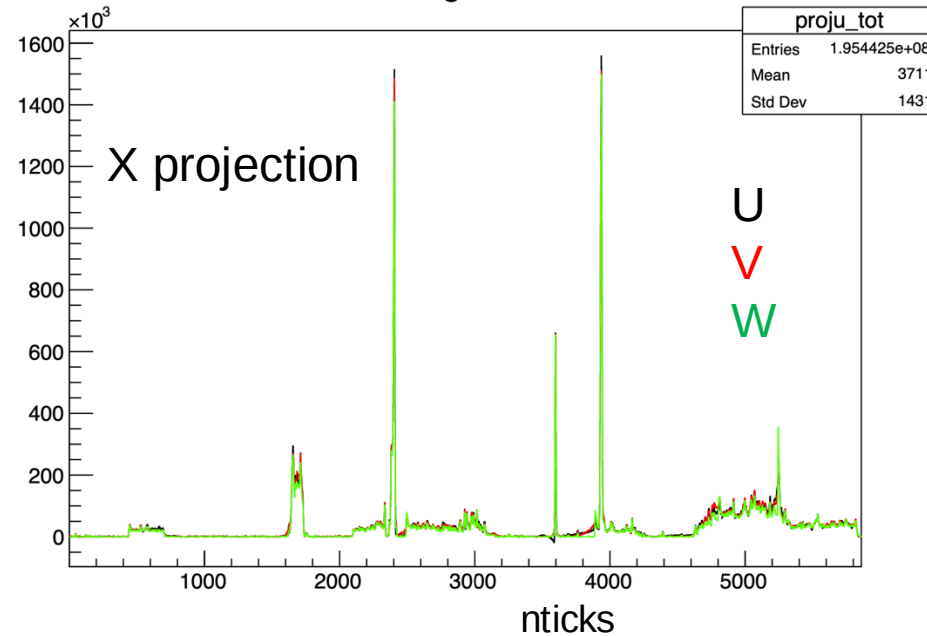
Charge uncertainty



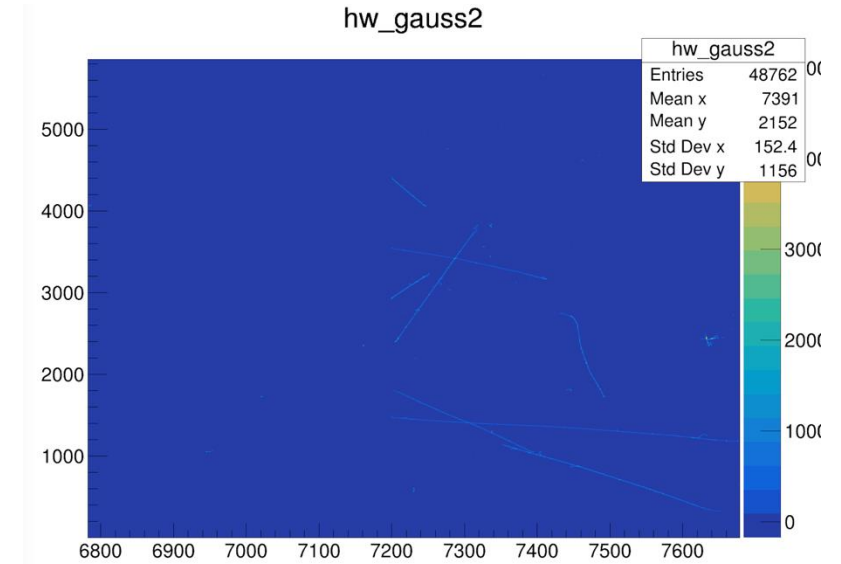
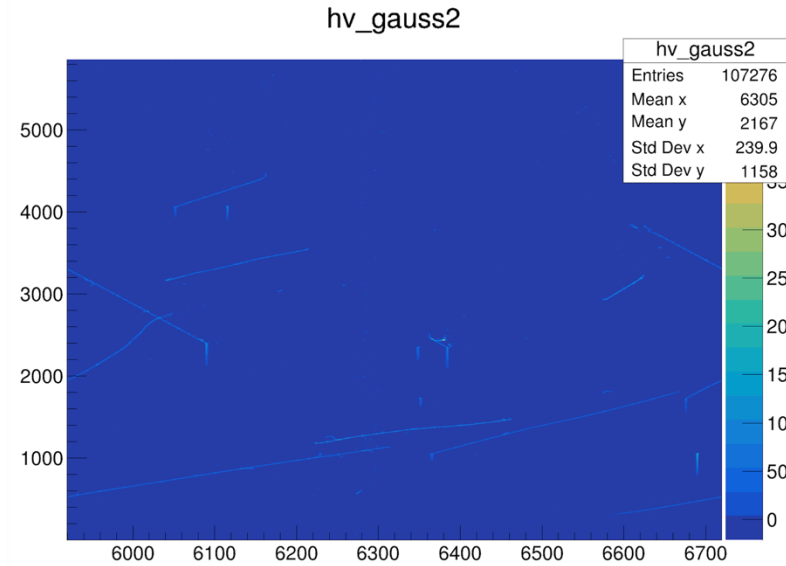
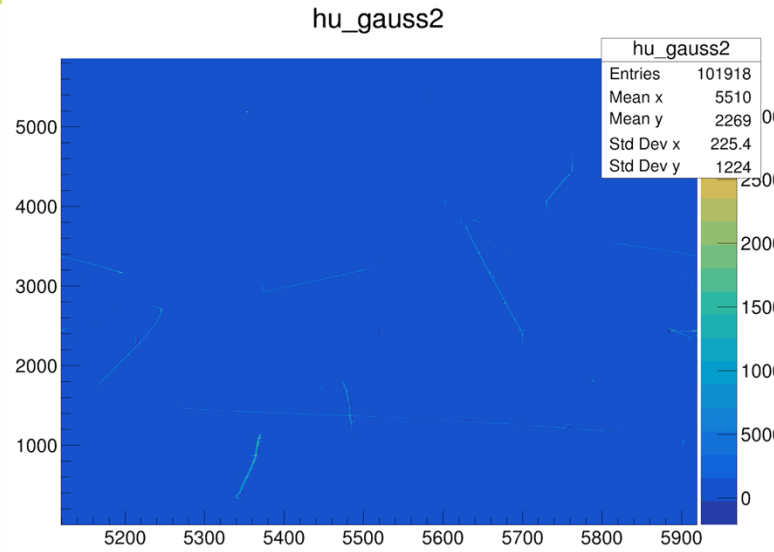
Charge consistency



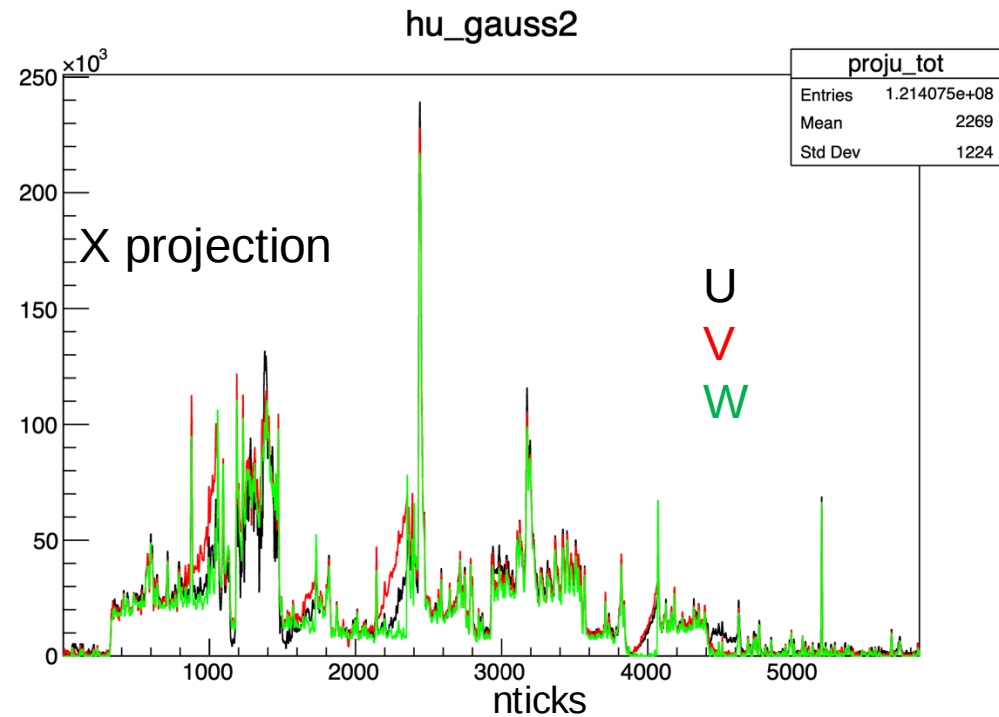
APA2
protoDUNE hd data,
Decon result,
ROI is not applied

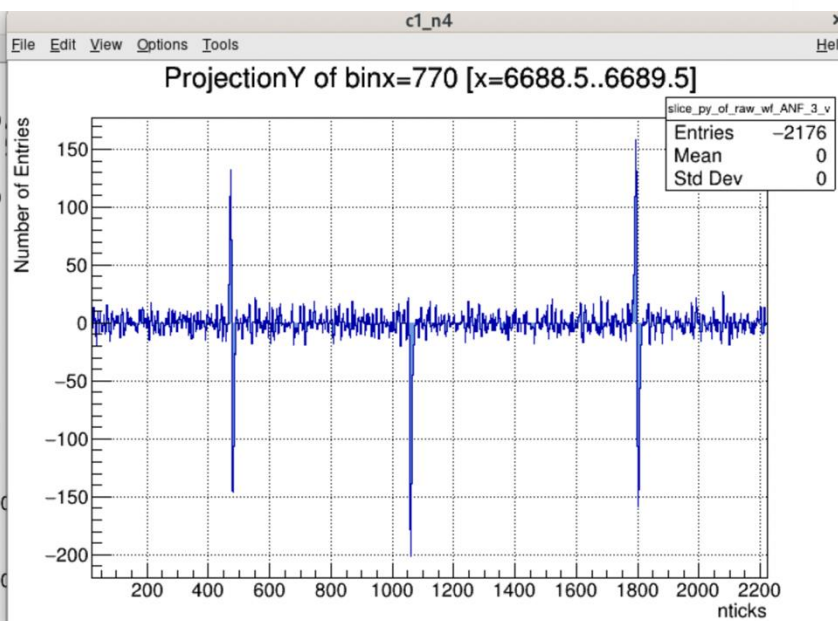
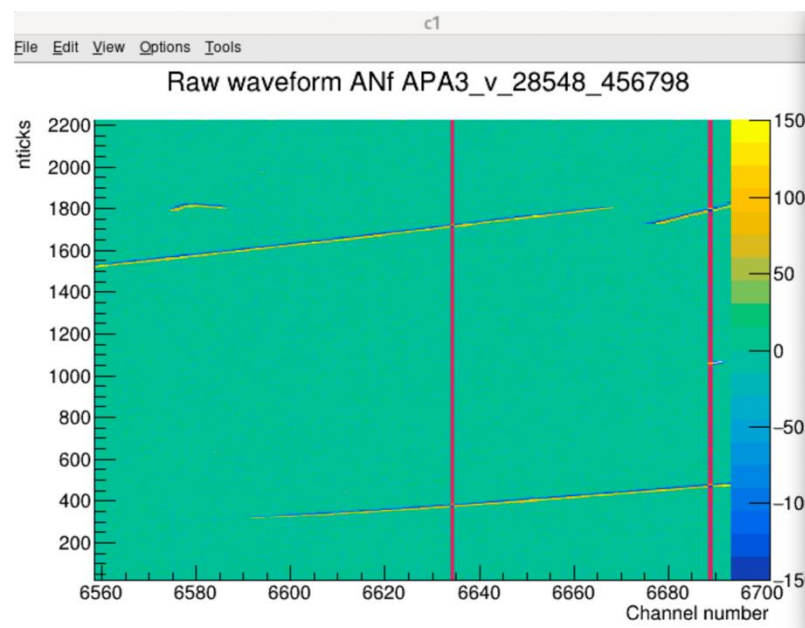
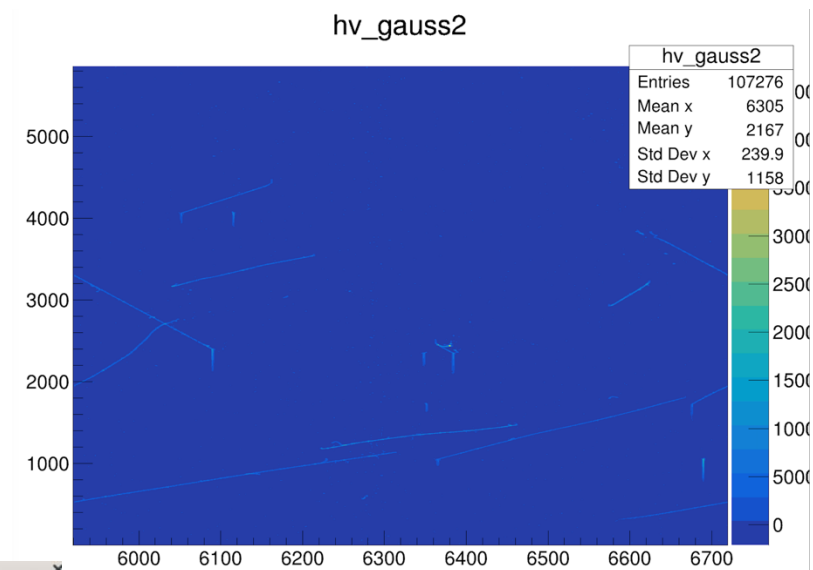
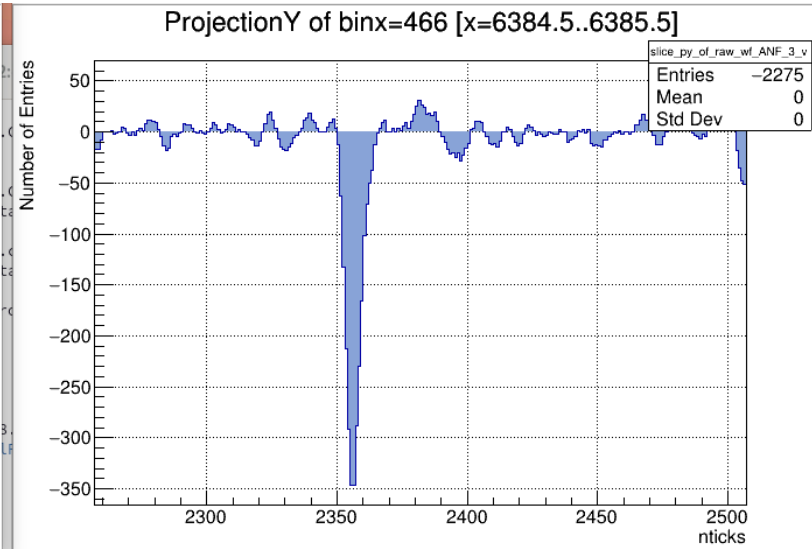
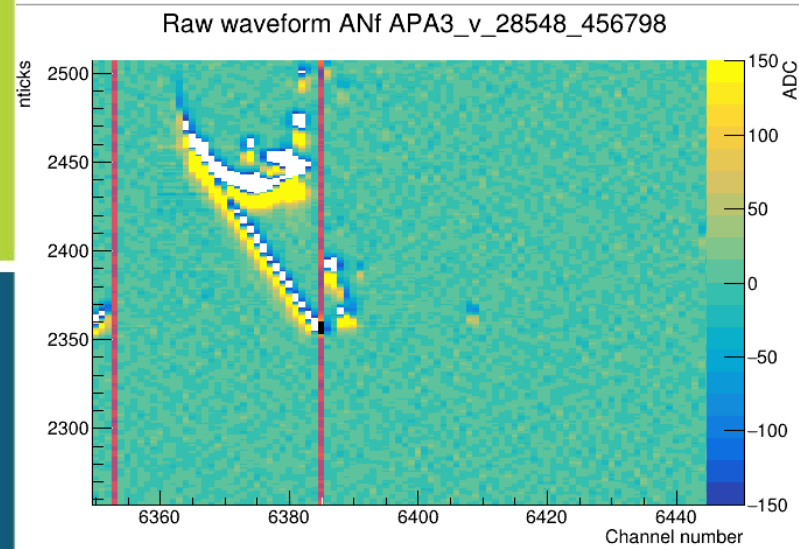


Charge consistency

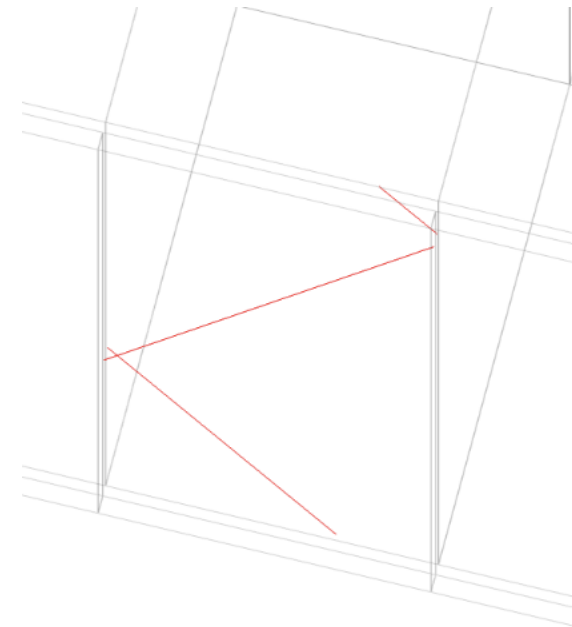
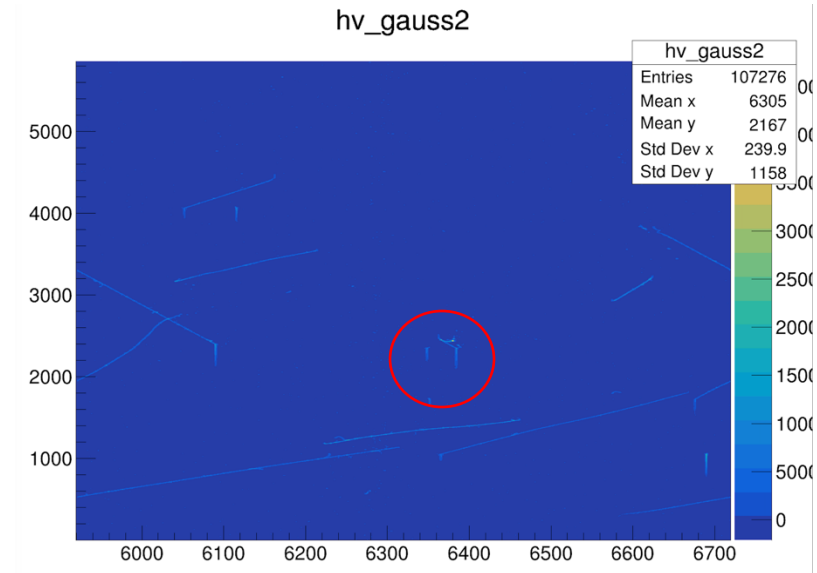
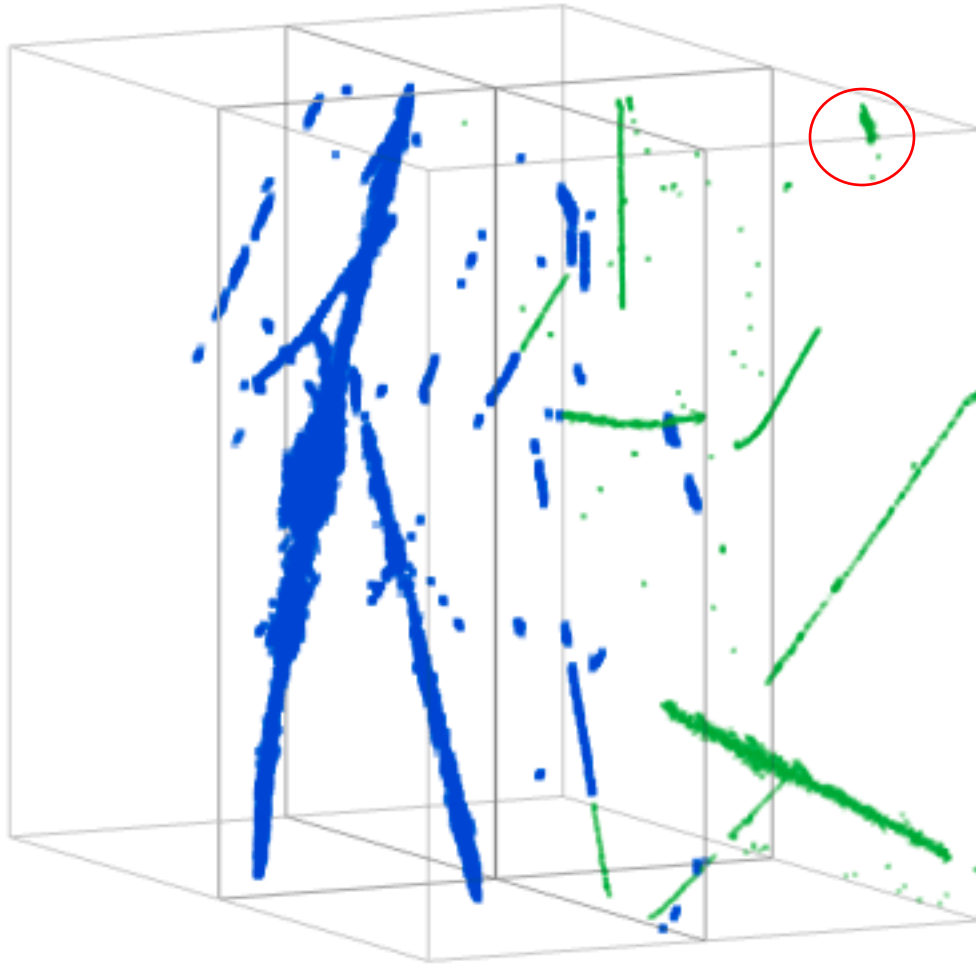


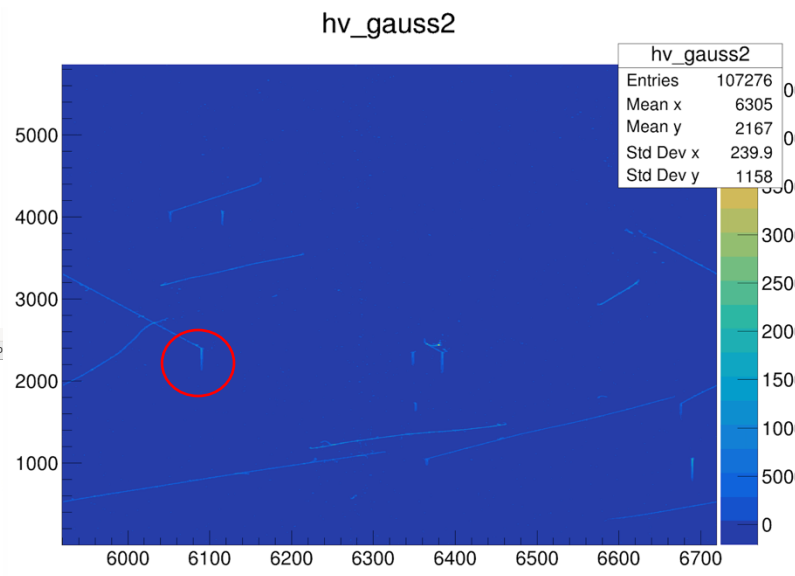
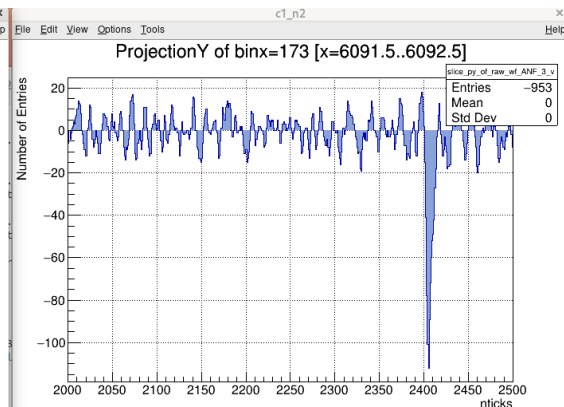
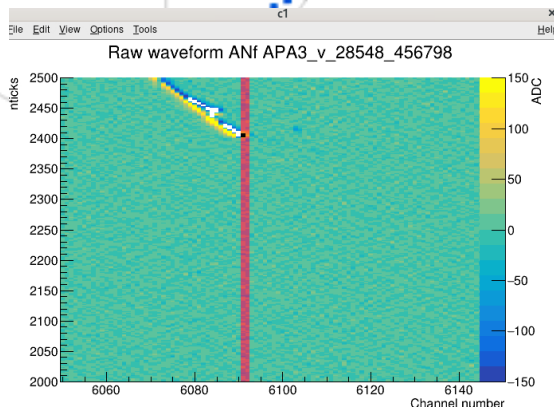
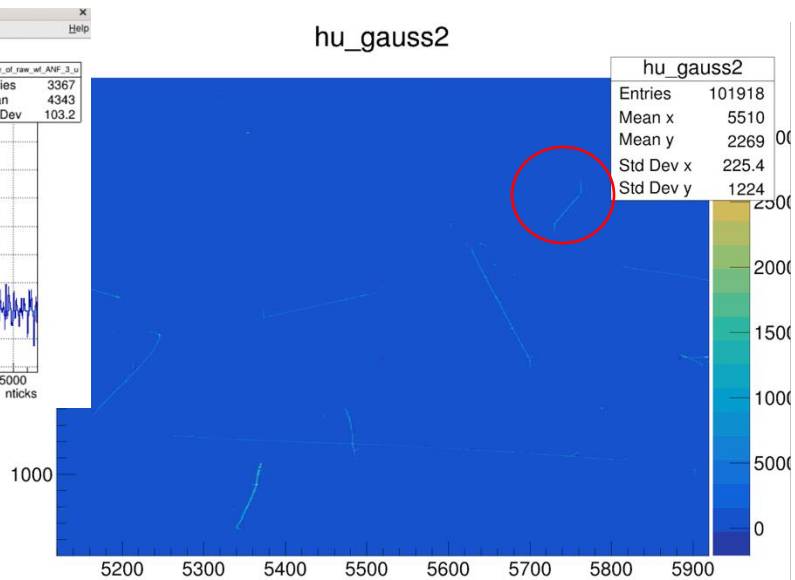
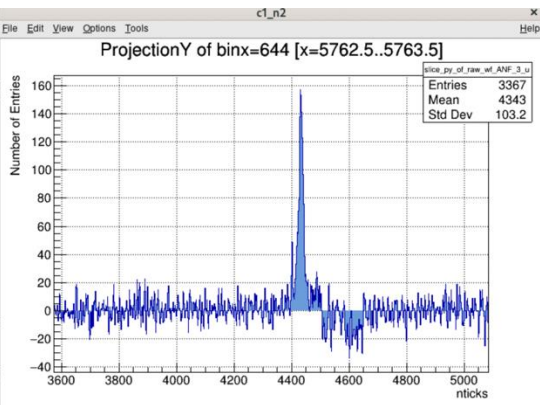
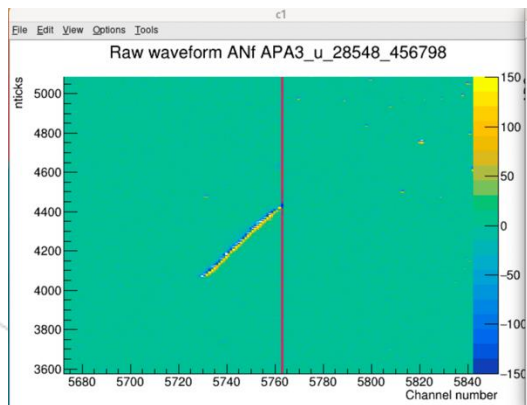
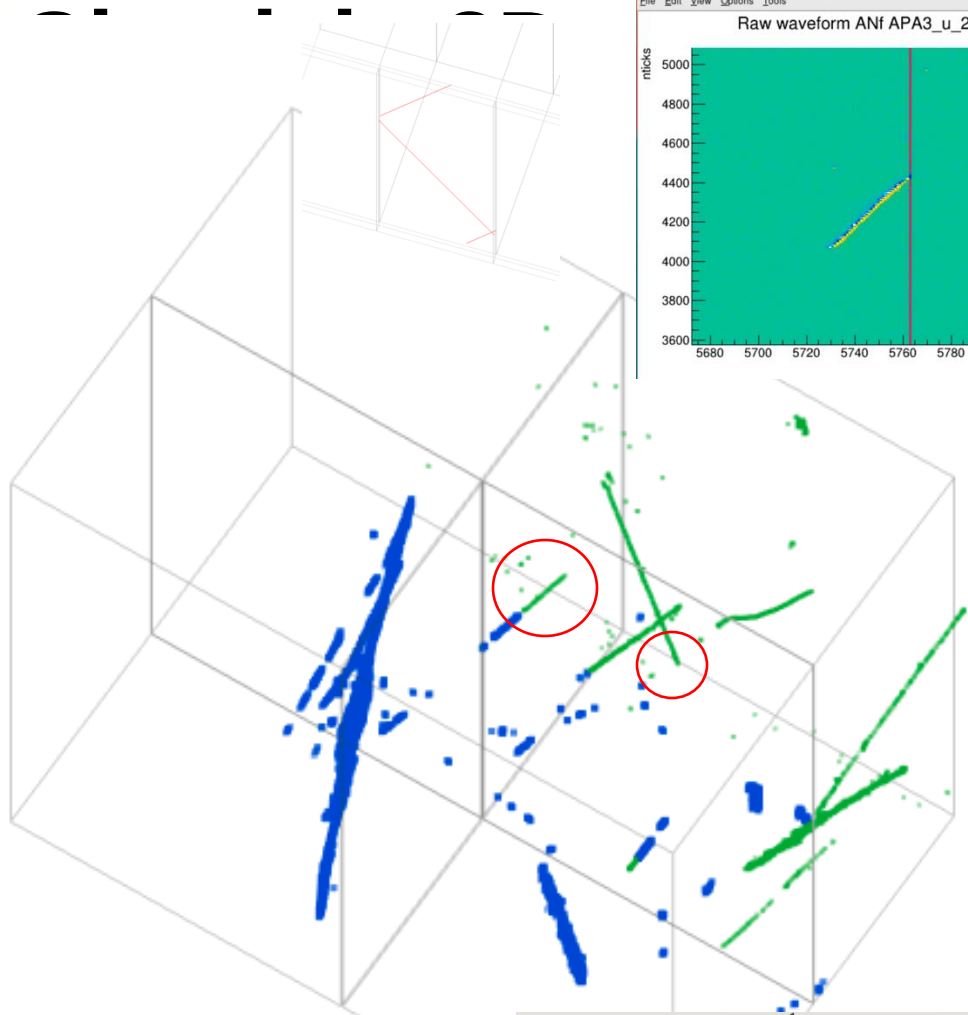
APA3
protoDUNE hd data,
Decon result,
ROI is not applied

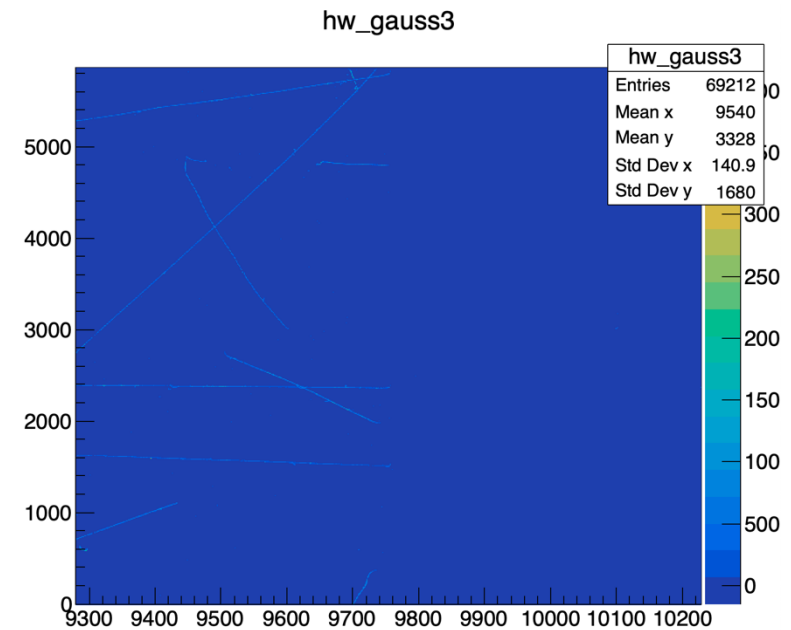
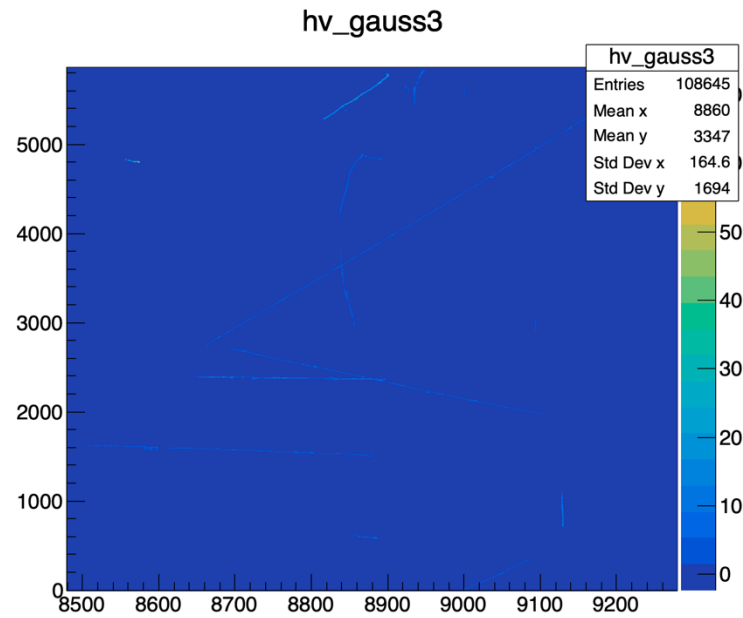
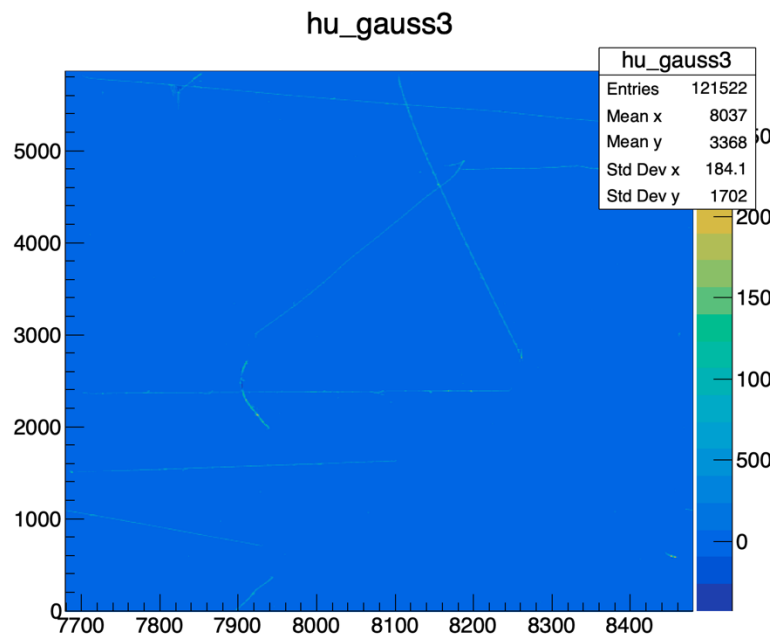




Check in 3D







APA4
protoDUNE hd data,
Decon result,
ROI is not applied

