

Data analysis for the TRB 3 setup

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The menu:

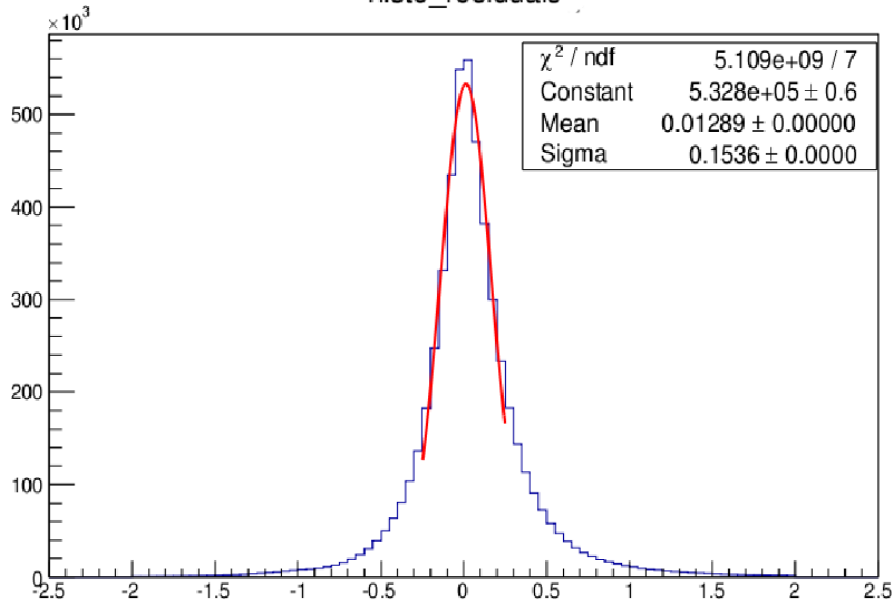
- Motivation
- What was already done ?
- The Setup
- Data Analysis
- Plans for the future
- Summary

The motivation

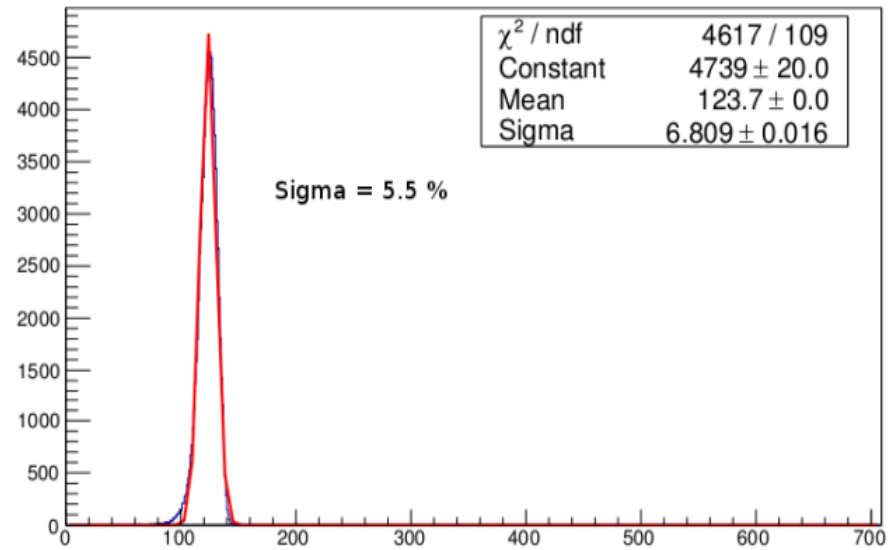
- Perform a check with higher amount of channels
- The origin of the second large structure in Drift time vs ToT spectra
- Tests of the setup with low HV
- Going with the threshold as low as possible

September`12 beam test with proton

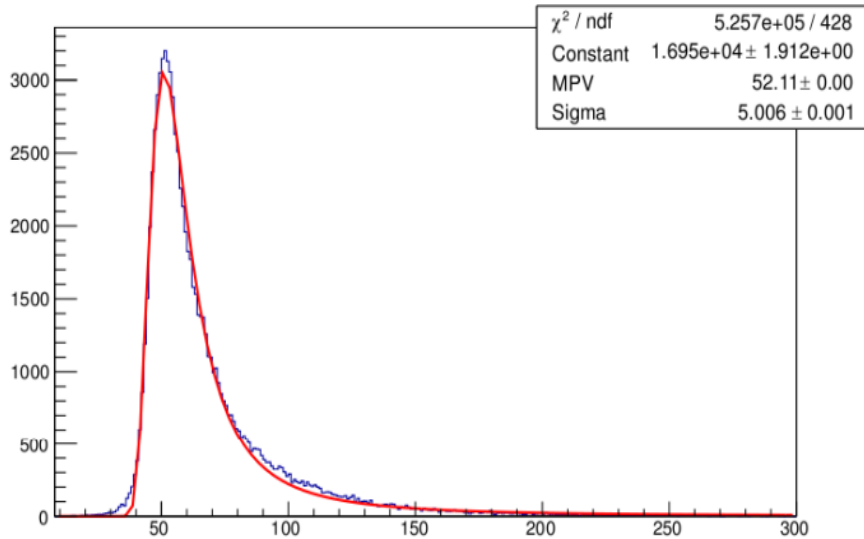
histo_residuals



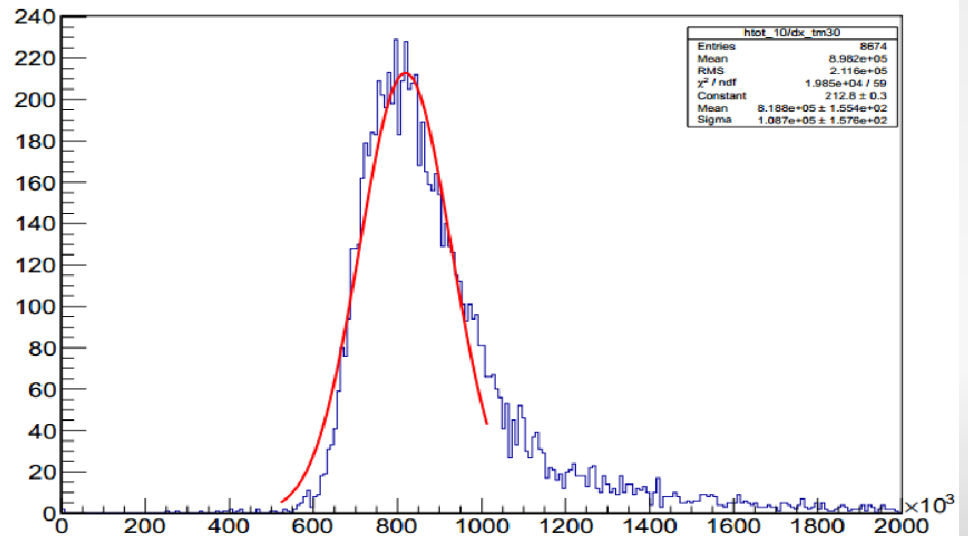
ToT for 10 straws / nt



ToT/dx for 10 straws

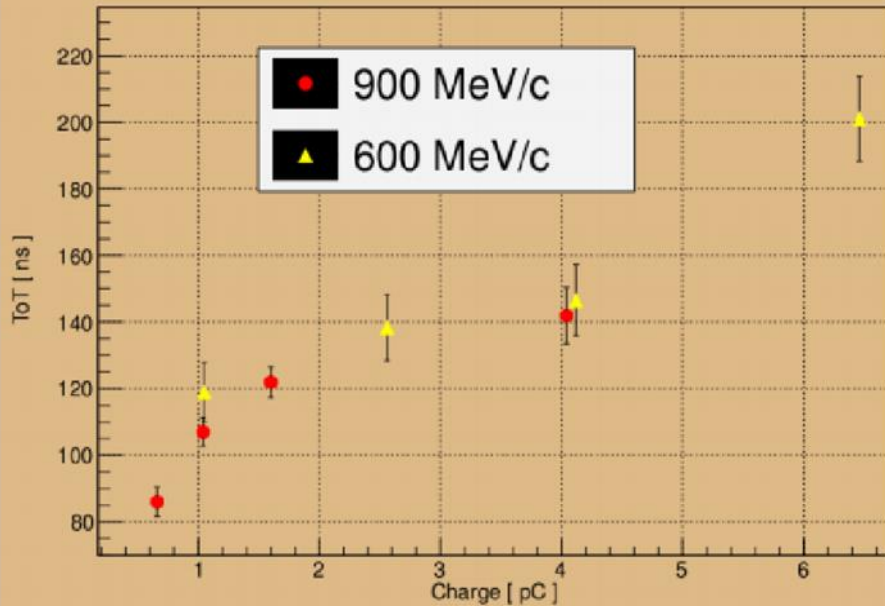


dE /dx for 10 straws tm30

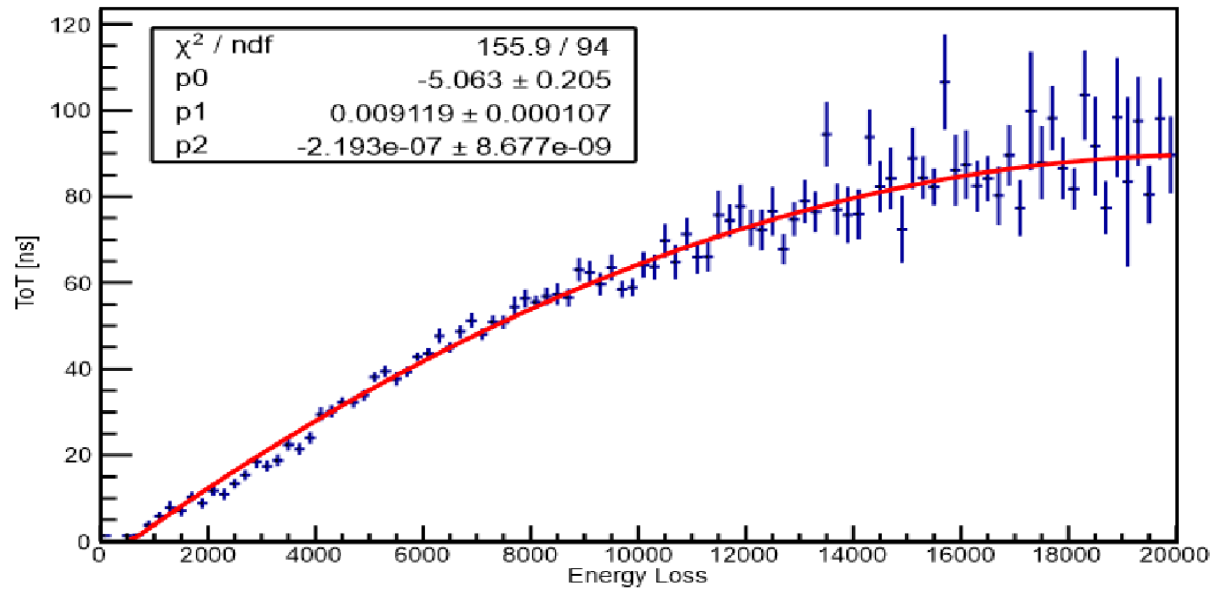
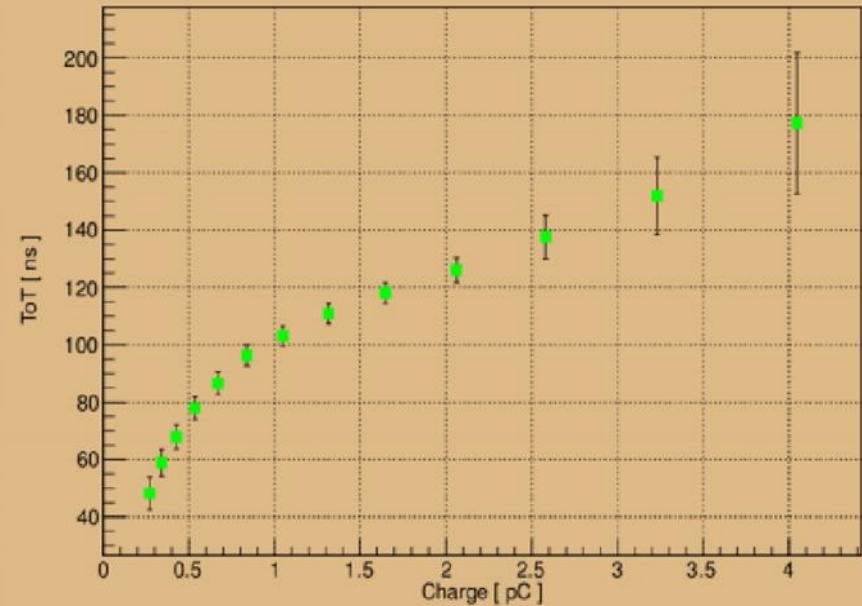


What we know about ToT ?

Mean value of ToT for 900 MeV/c & 600 MeV/c protons tm30



Mean value of ToT for Fe-55



The Setup

- 96 channels arranged in 8 layers
- Ar/CO₂ at 1 bar overpressure
- 3 "ASIC" boards and one TRB v3 board
- HV set at 1750 V
- 1 trigger scintillator
- Tests done with Sr⁹⁰ && Cosmics

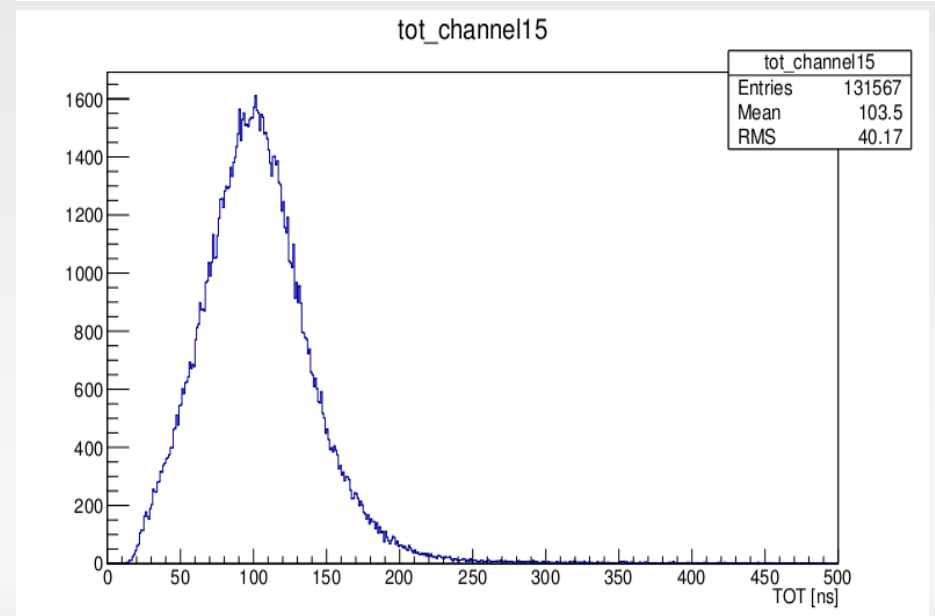
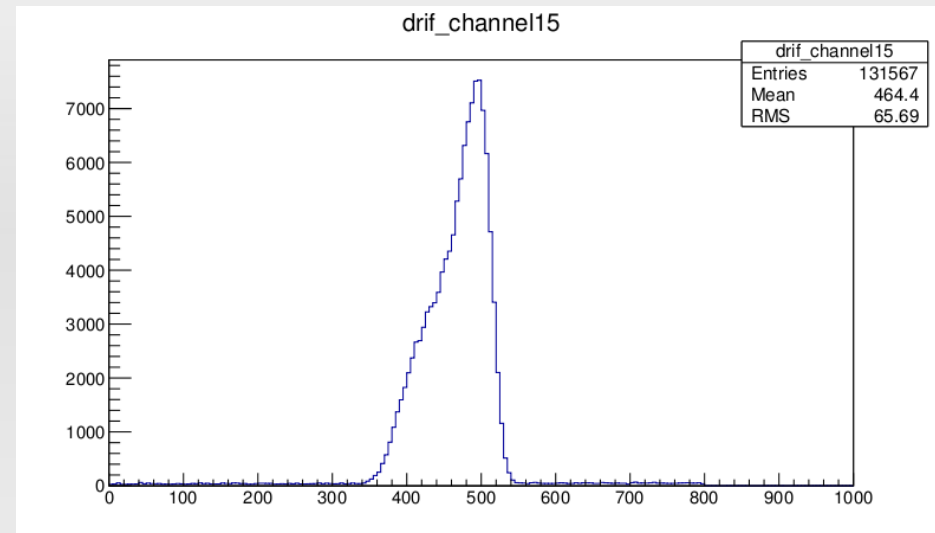
The Setup

STT Prototype

Trigger

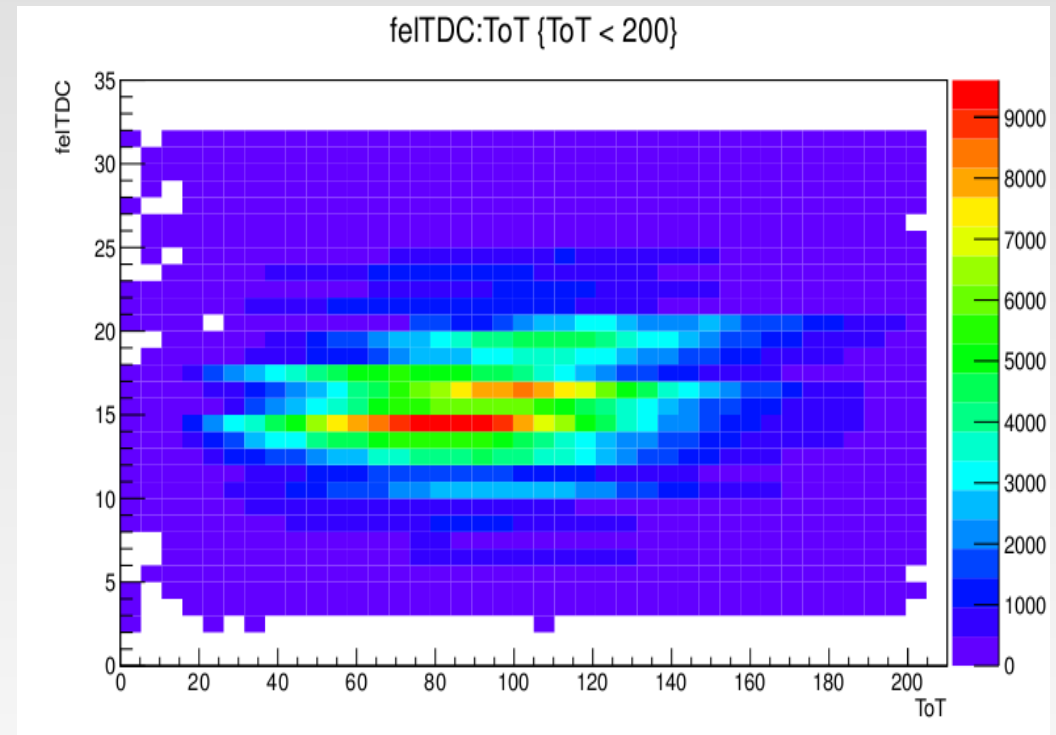
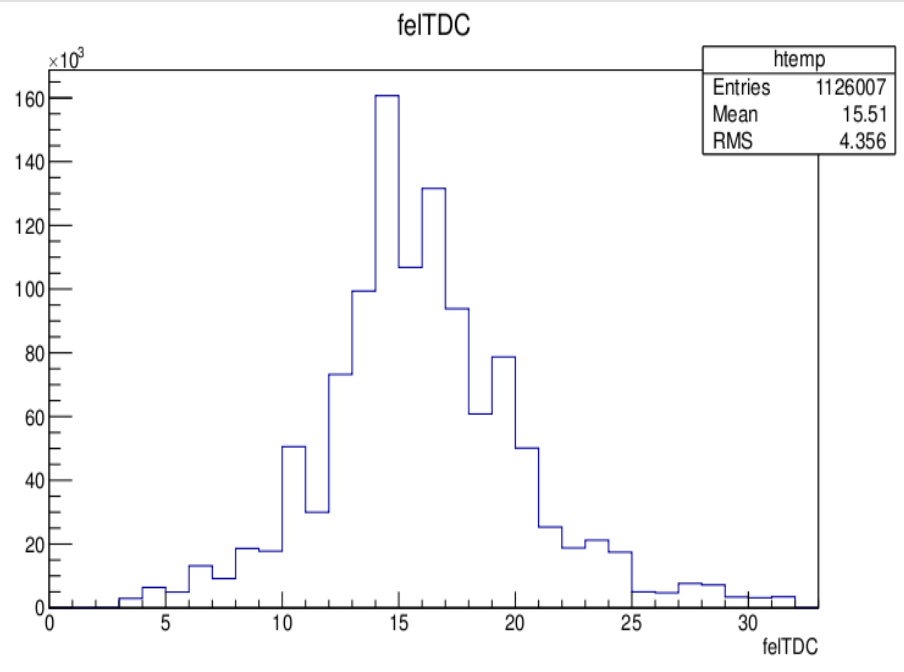
ToT & Drift Time spectra

- ToT distribution follows semi-Landau shape [expected]
- Drift time is within the simulated 130 ns !

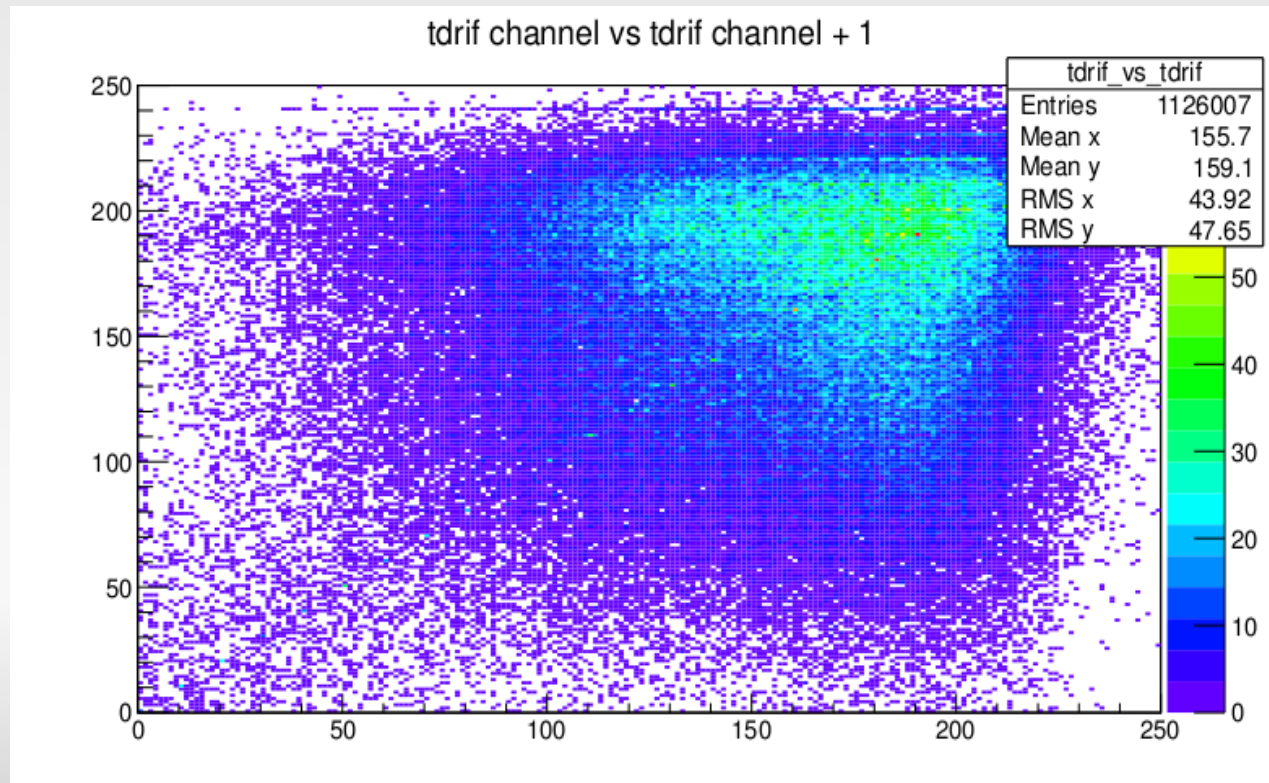
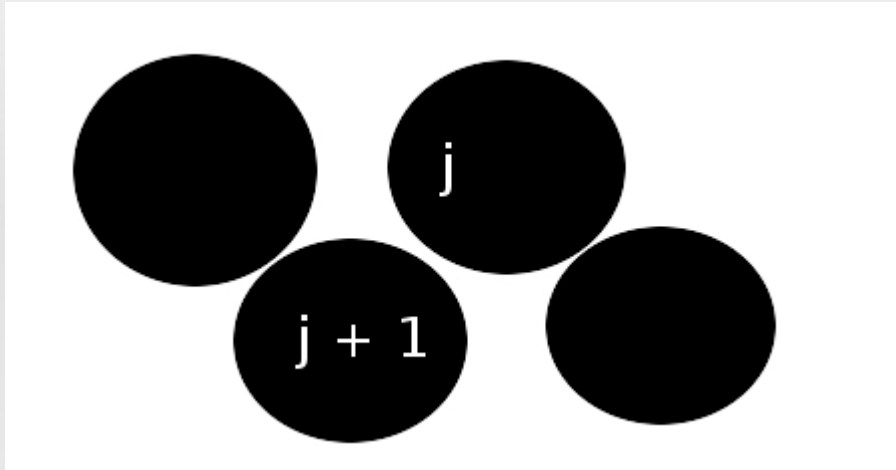


Data Analysis

□ Sr-90 tests



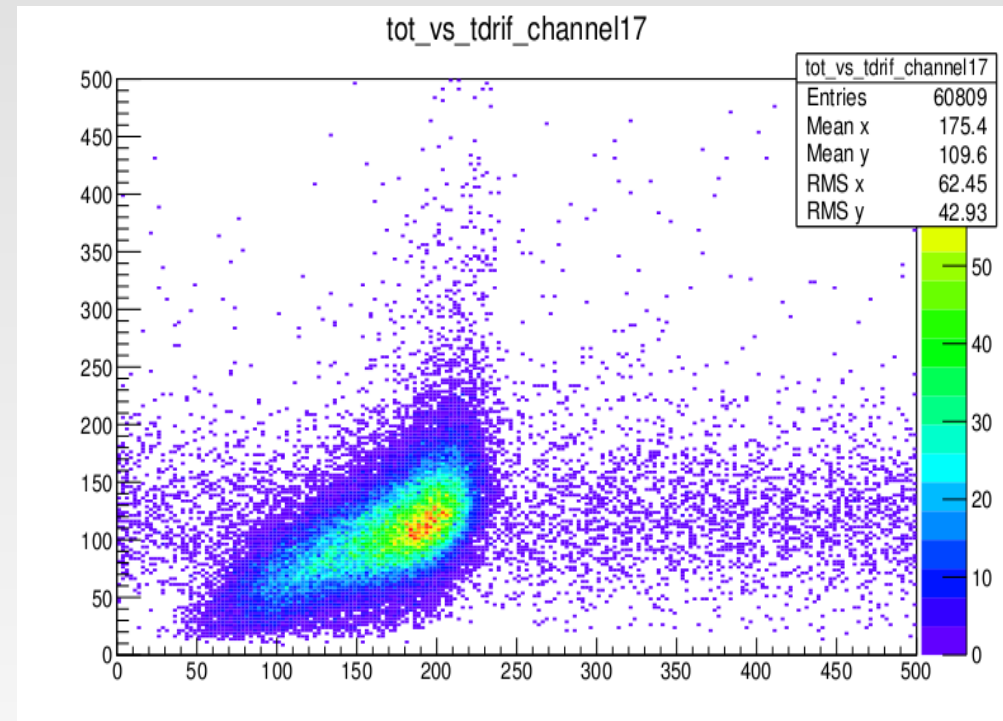
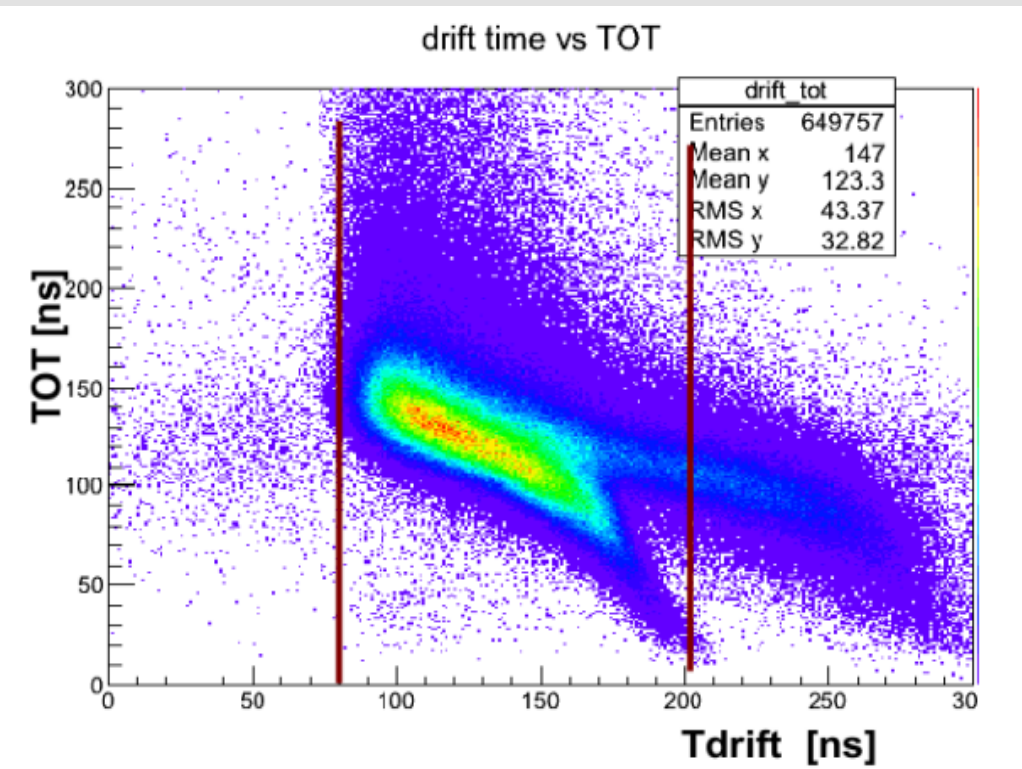
Correlations



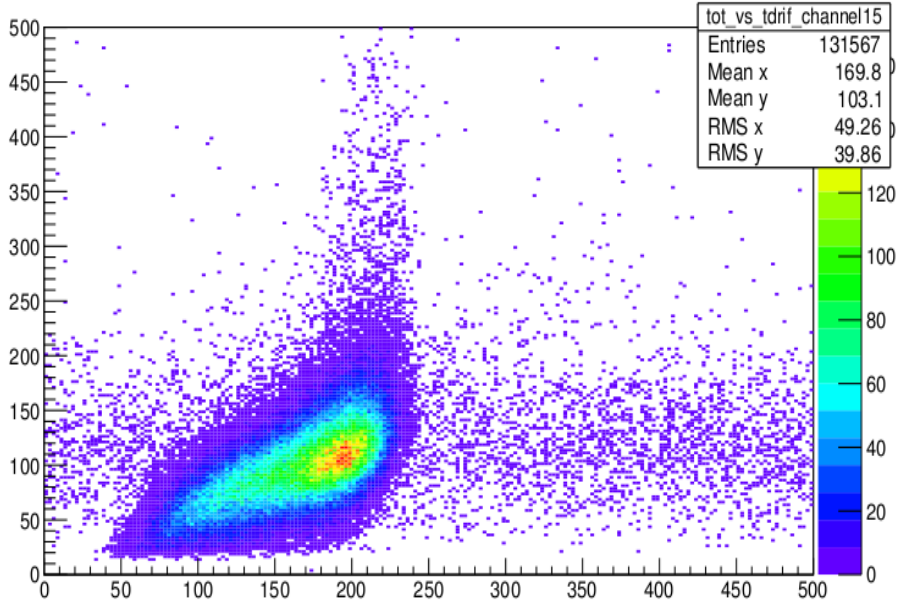
What we had vs What we have

□ Old

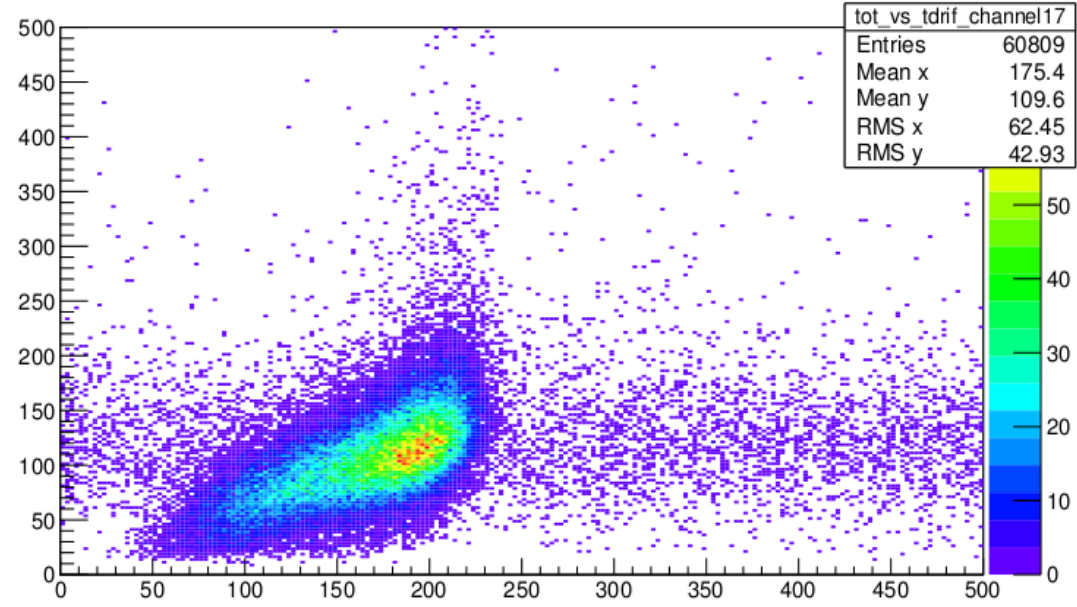
New



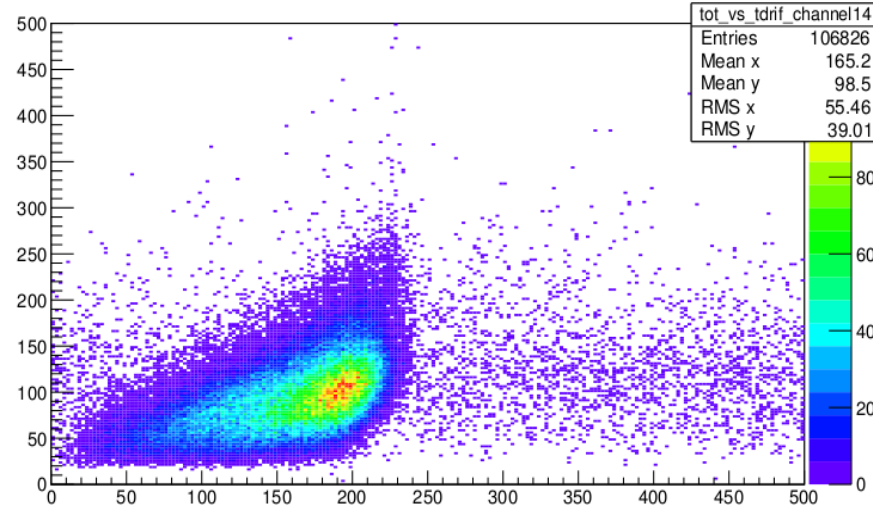
tot_vs_tdrif_channel15



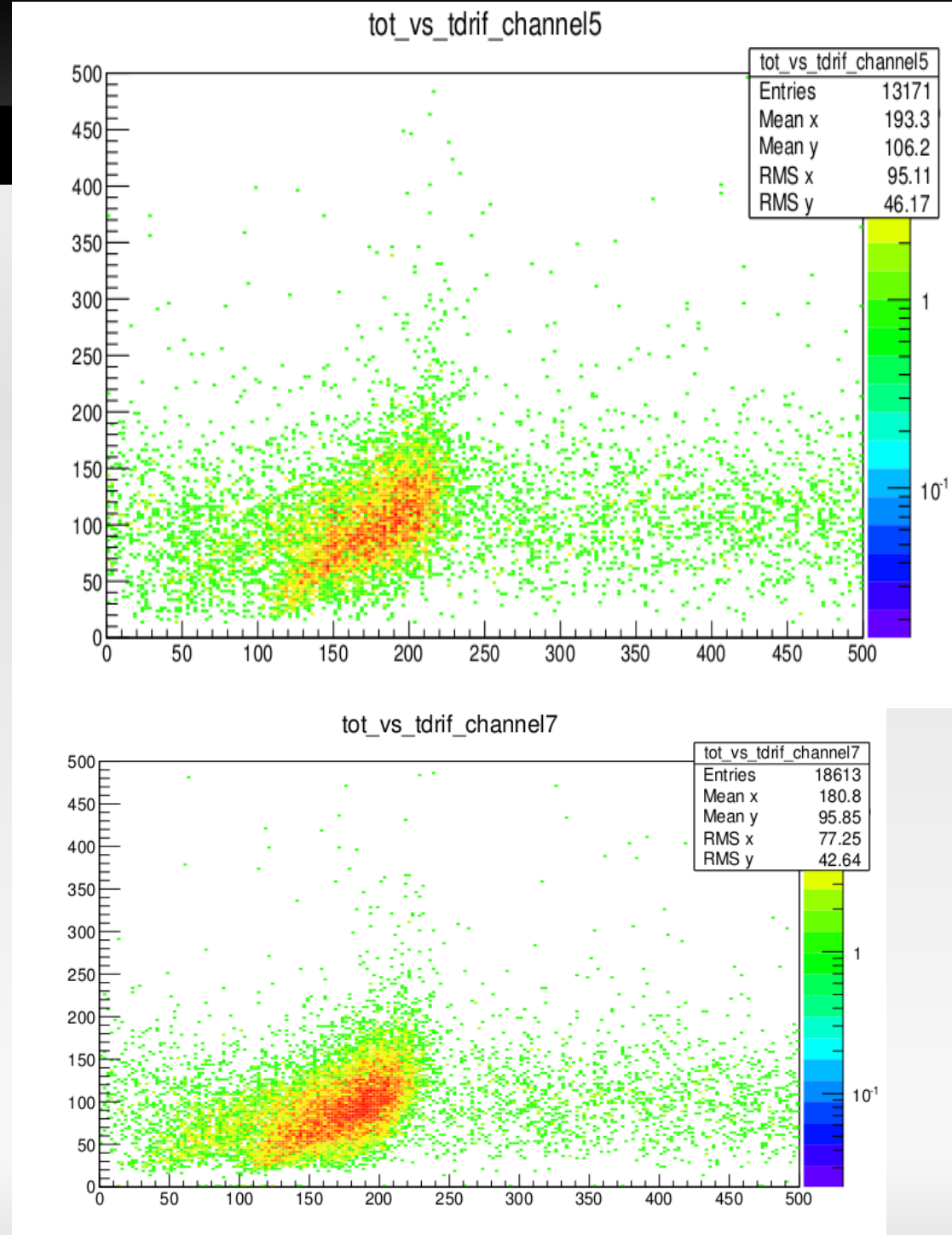
tot_vs_tdrif_channel17



tot_vs_tdrif_channel14



- Second lobe visible for channels which were less irradiated by the source

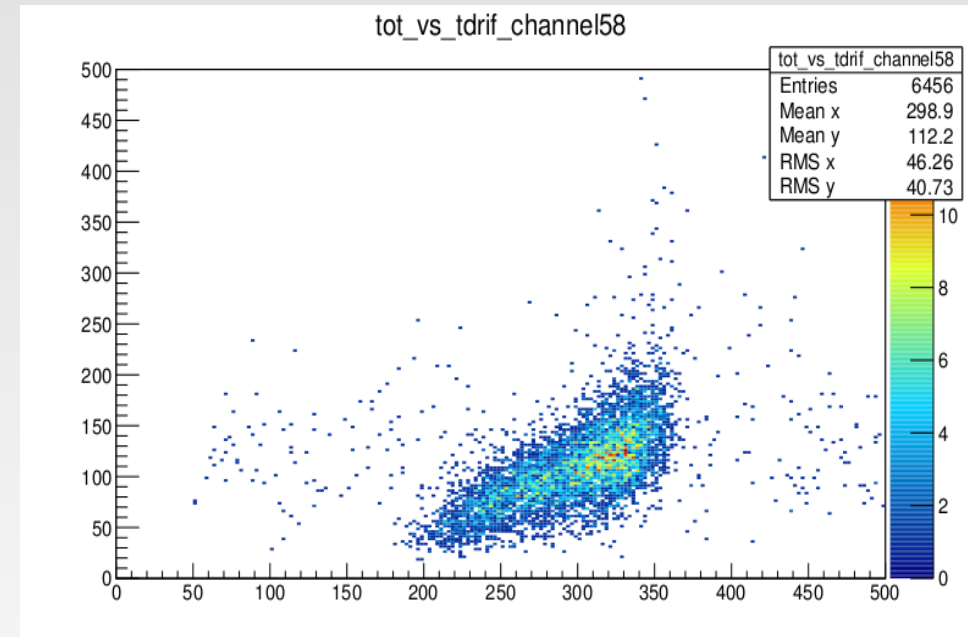
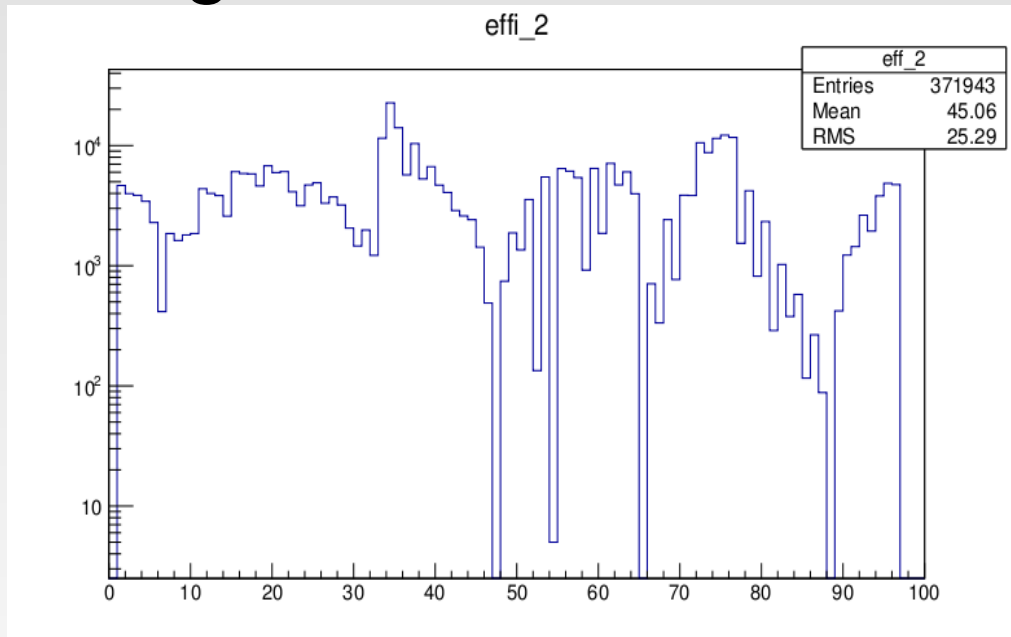


Conclusion

- No second lage structure visible
- Second lage is comming from "late" scaterd particles, geometry effects && trriger pileup
- Cross Check with the cosmics

Cosmics

- Uniform irradiation of the detector, no second leg !



Planes for the future

- Tracking
- Spatial resolution studies
- Time and energy resolution studies
- Suppressing the so called walk effect [test of the NEW ASIC setting]