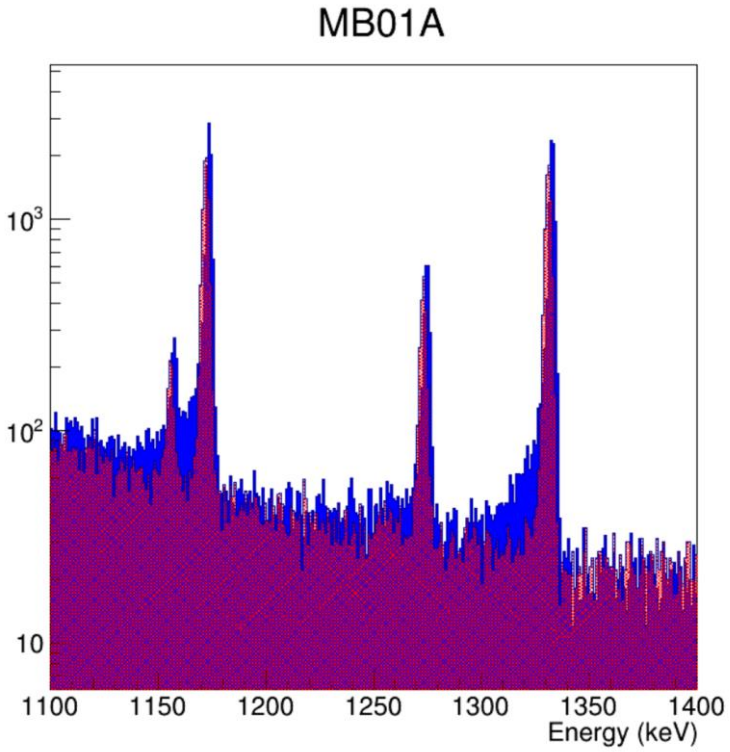
KU LEUVEN

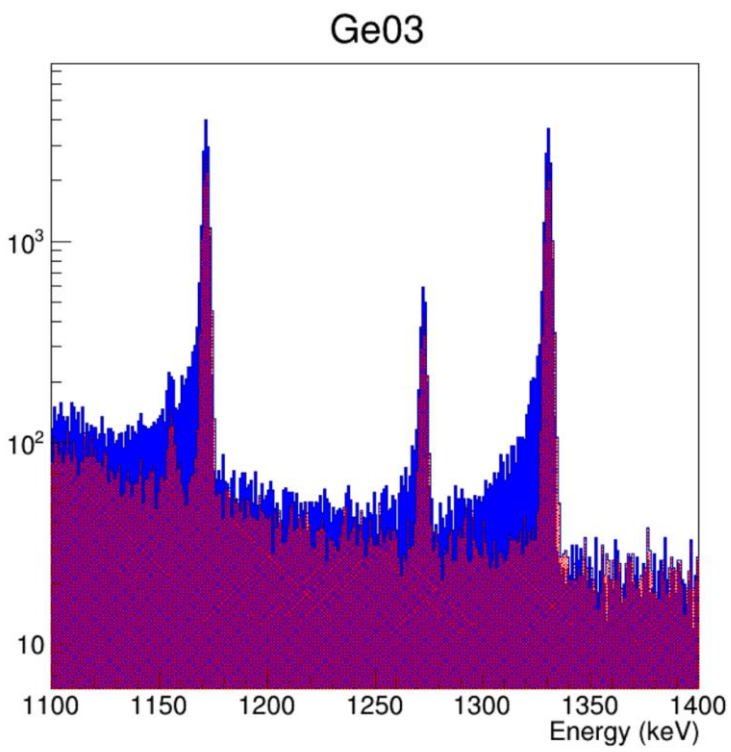
Update muX meeting 23/02

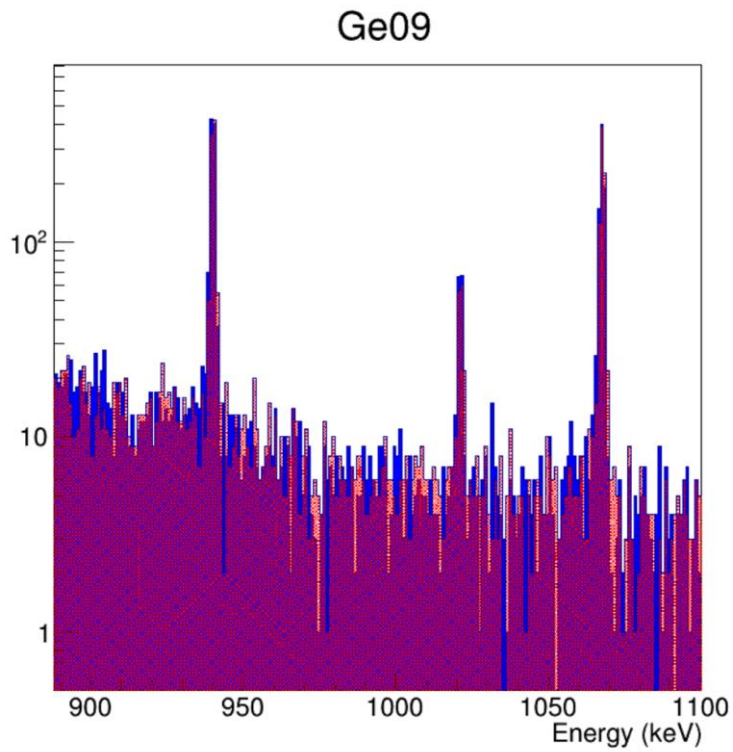
Michael Heines

Supervisor: Thomas E. Cocolios

BLR in K & Cr runs

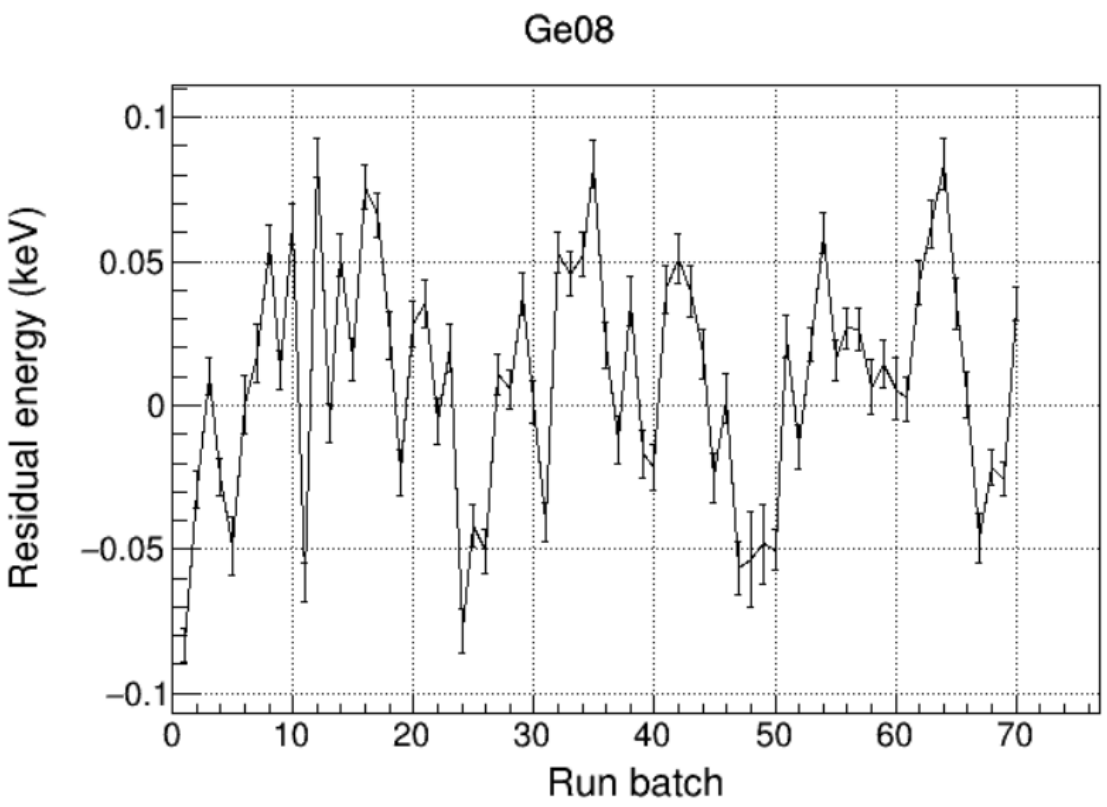


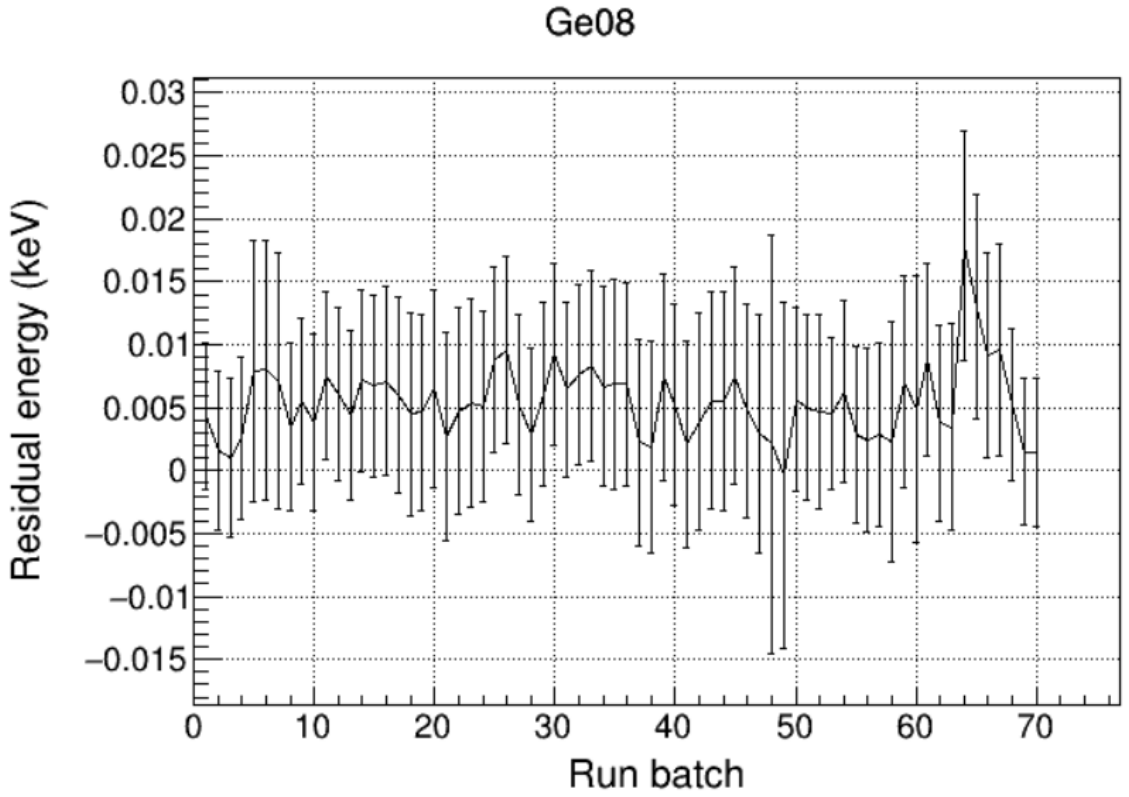




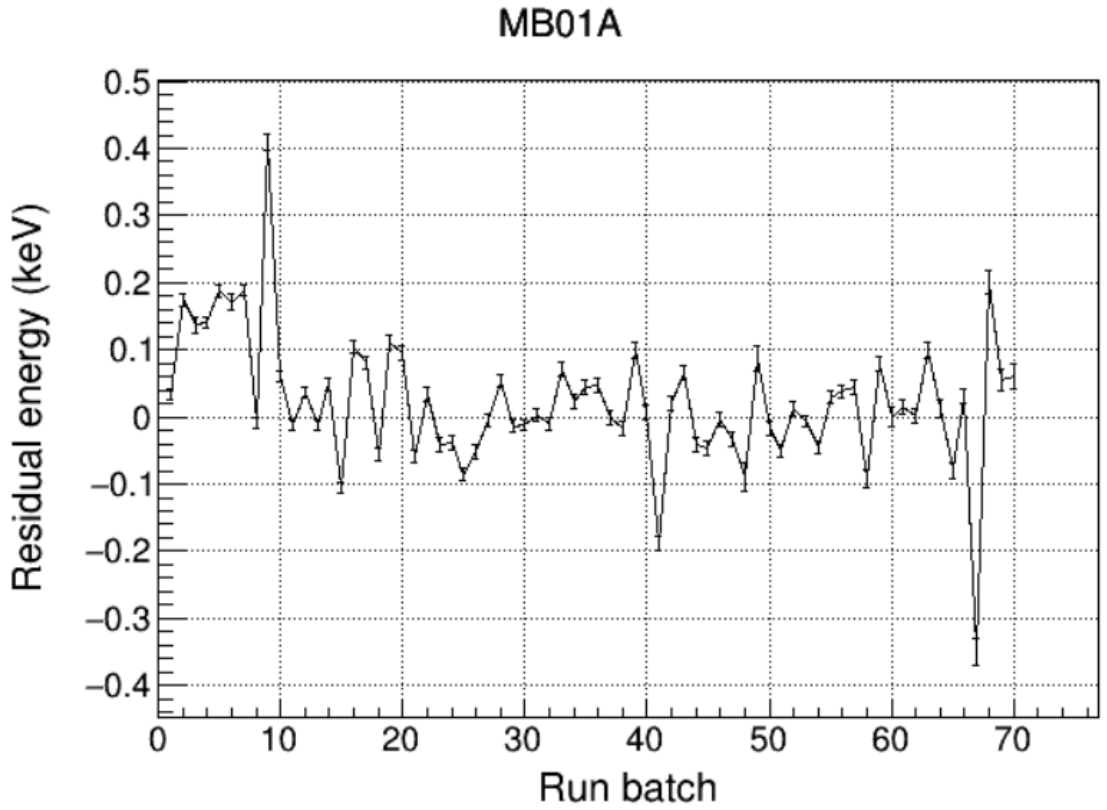
Used calibration from earlier in the run → Not properly calibrated!

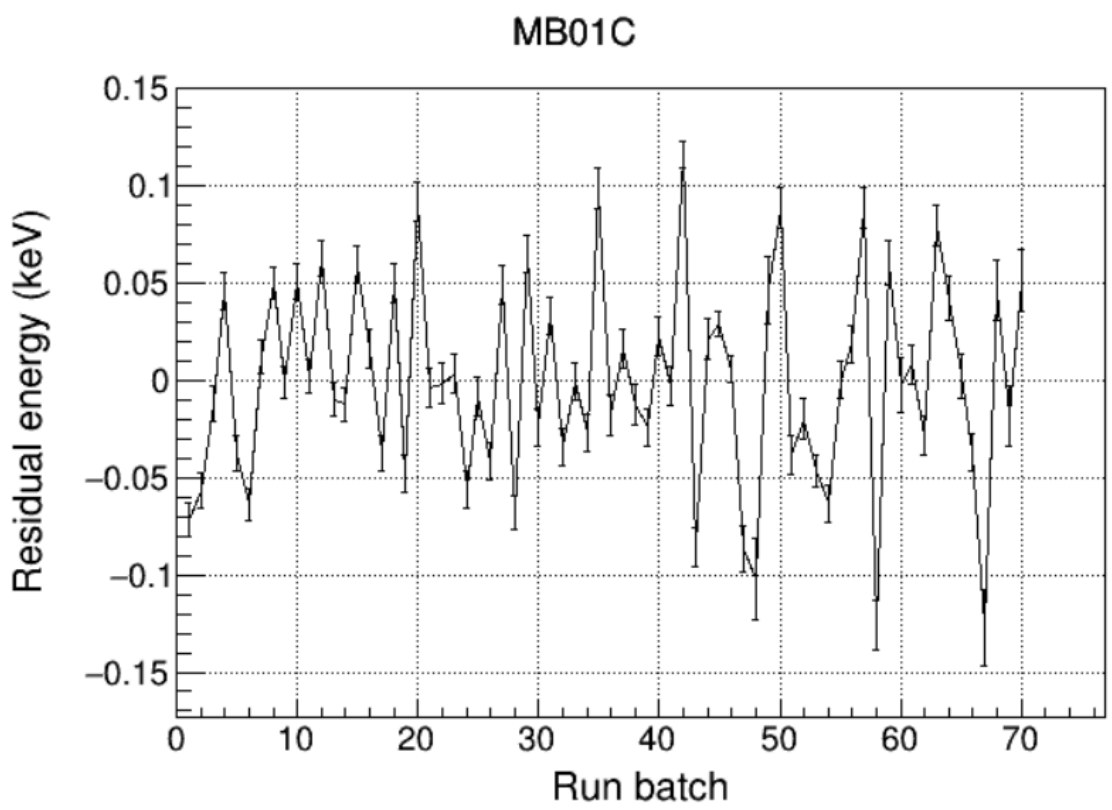
Gaindrift in K & Cr runs





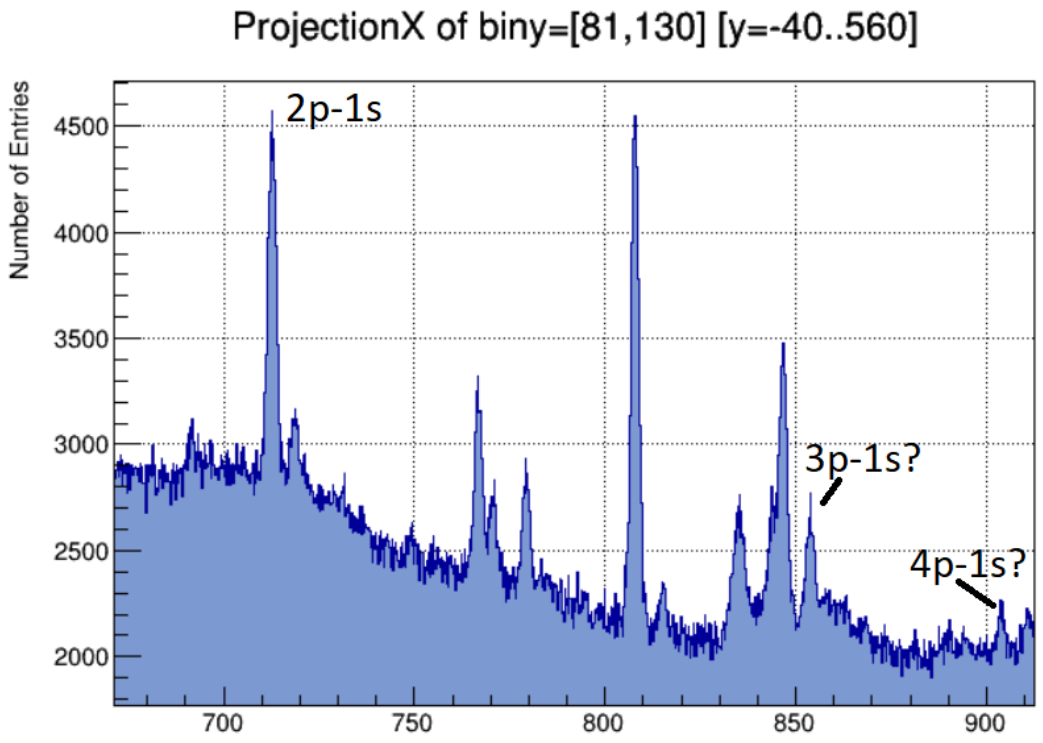
MB01C sudden drift?



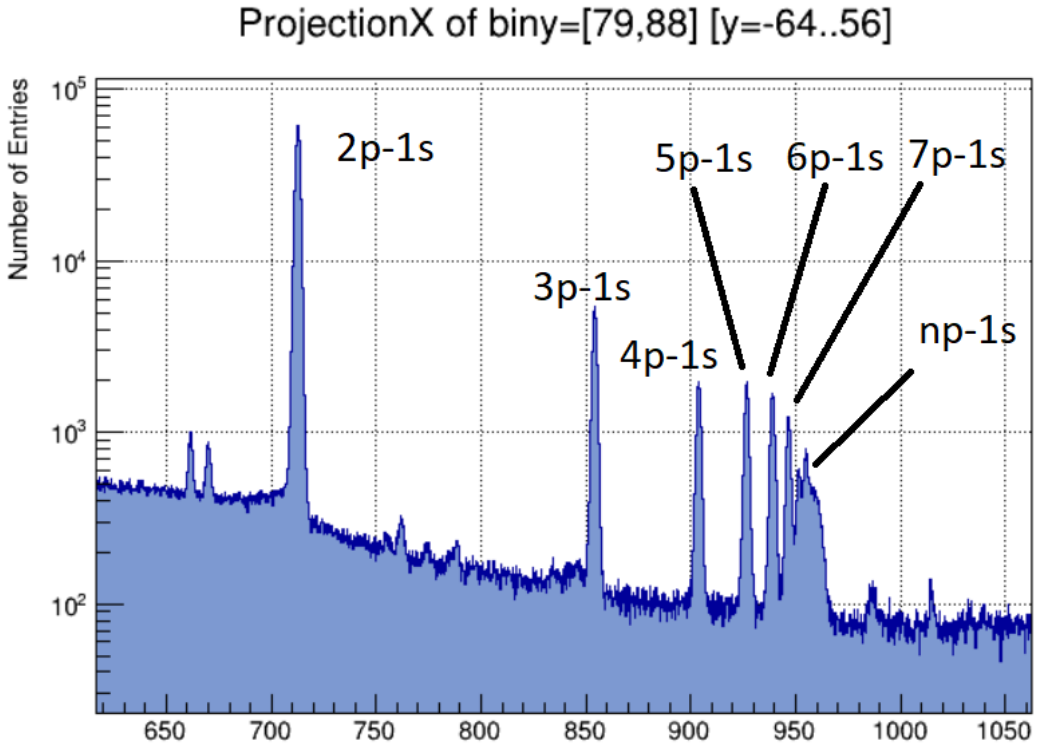


First offline spectra of K

Implanted ^{39}K: ~3 days



Natural ^{nat}KOH: ~3 hours



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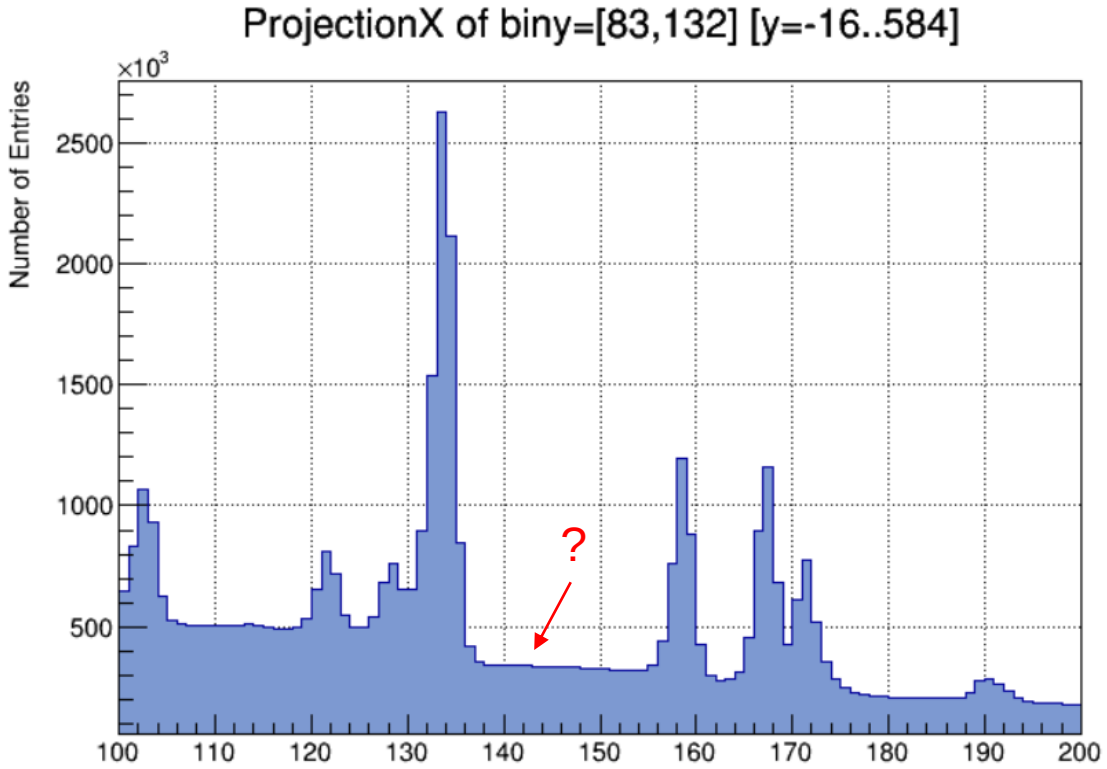

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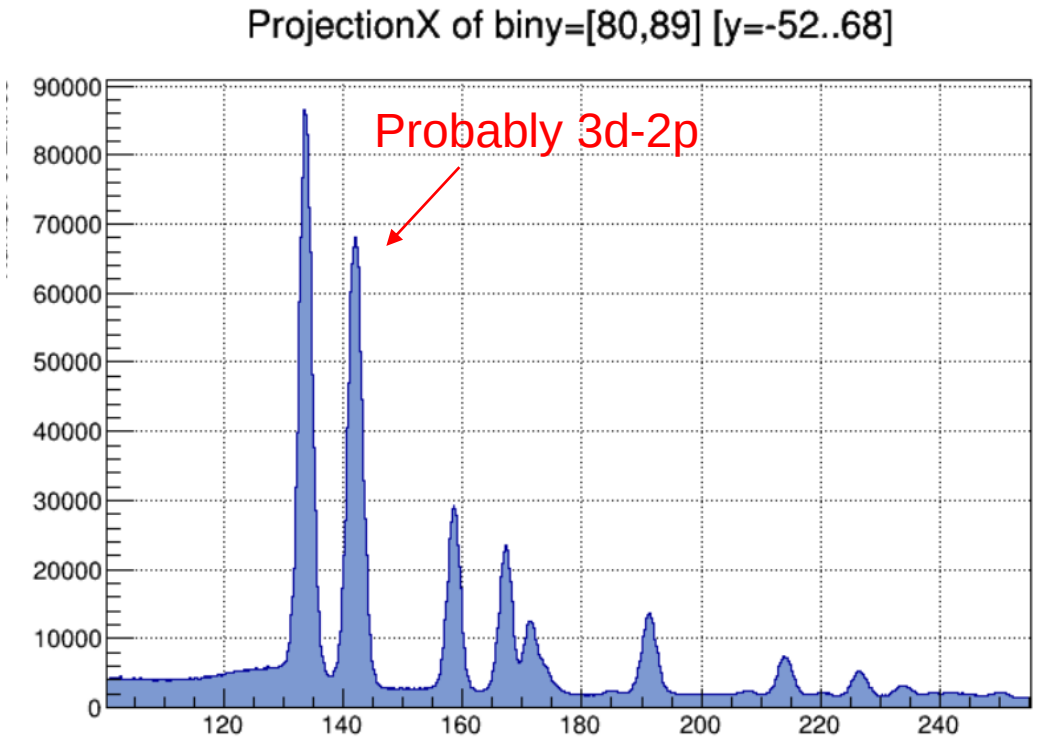
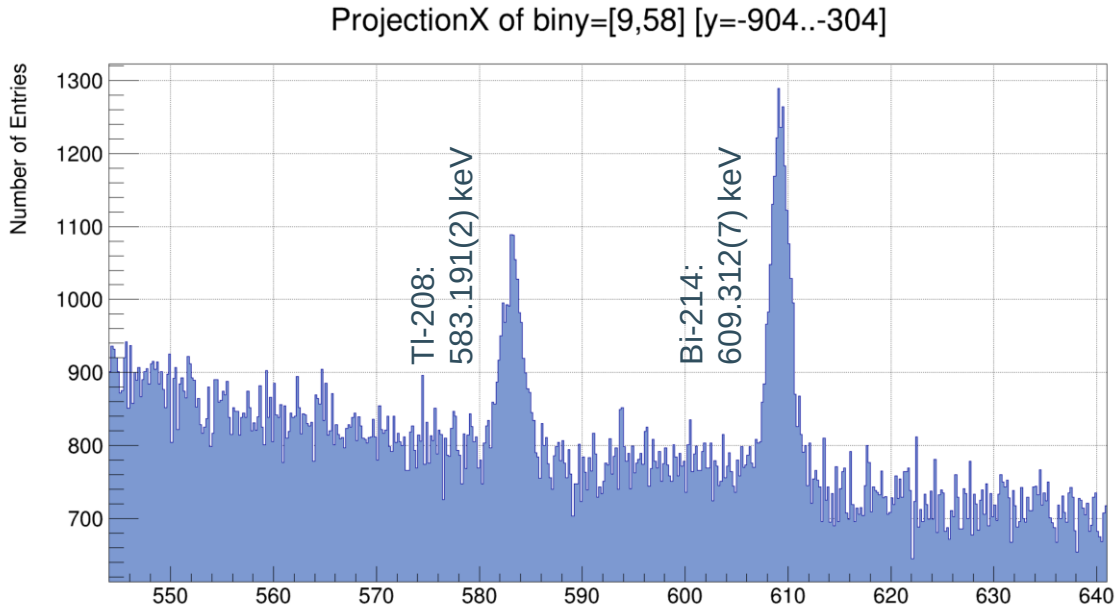


Recalibrating final spectra

- Lines used for gain drift:
  - Cs-137: 662 keV
  - Co-60: 1173 keV
  - Na-22: 1274 keV
  - Co-60: 1332 keV
  - K-40: 1460 keV

- Minor additional lines in the background: (-1000)
  - Tl-208: 583 keV
  - Bi-214: 609 keV
  - Ac-228: 911 keV
  - Ac-228: 969 keV
  - Tl-208: 2615 keV → Not really of interest

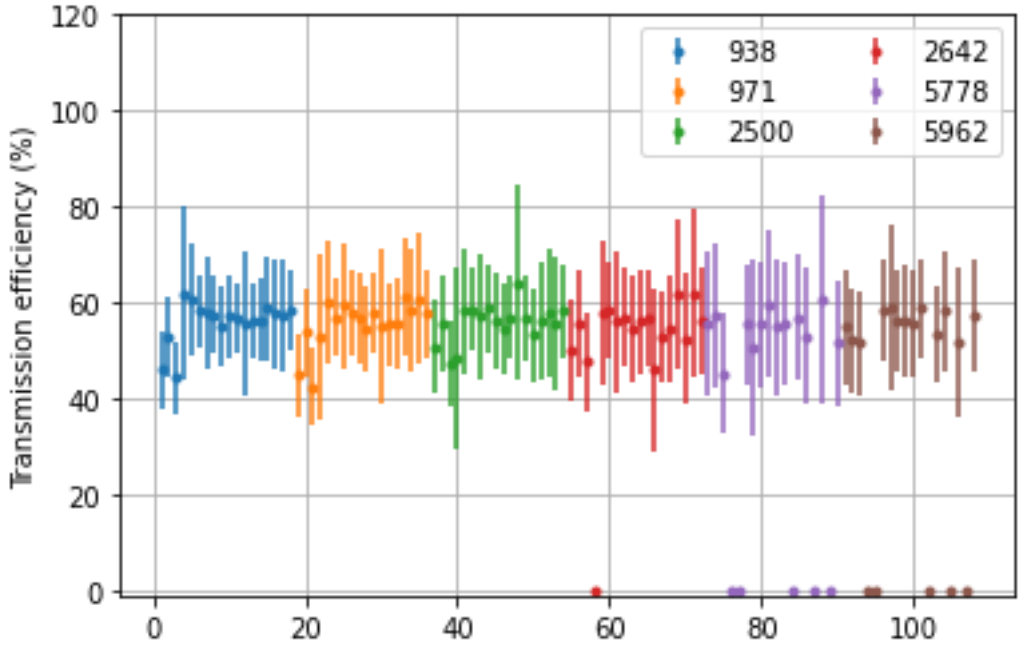
All detectors
Can extend time cut for more statistics



Efficiency

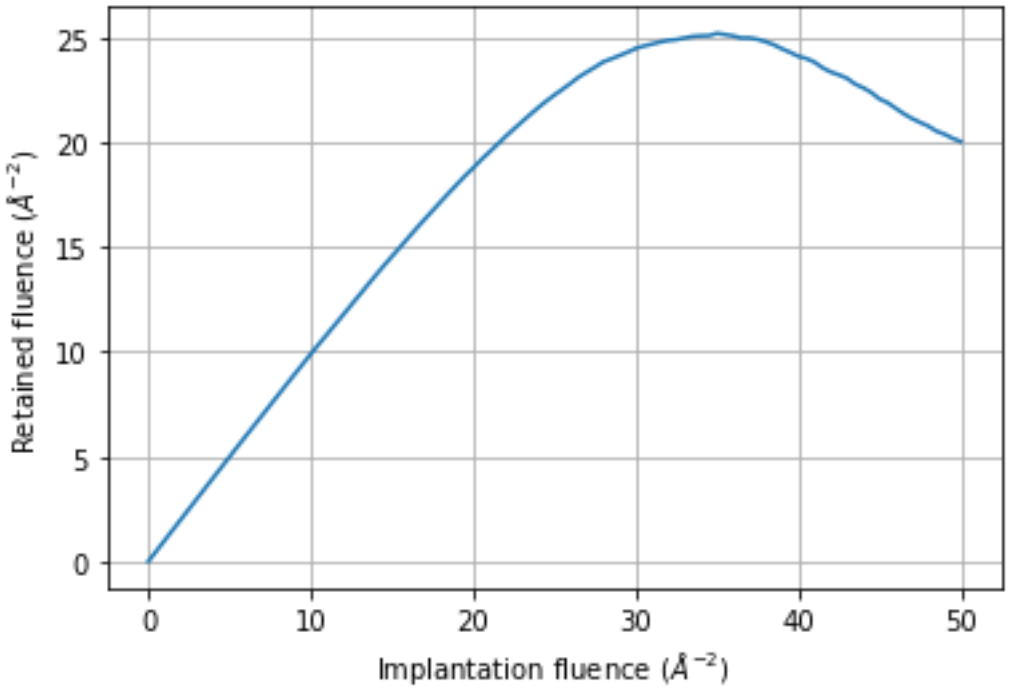
- Window transmission:
  - $\epsilon_{window} = 55.11(109)\%$
  - $\epsilon_{Sami} = 54.2(2)\%$

- Sufficient to fit with:
  - gaussians?
  - 2 gaussians per peak for lead?

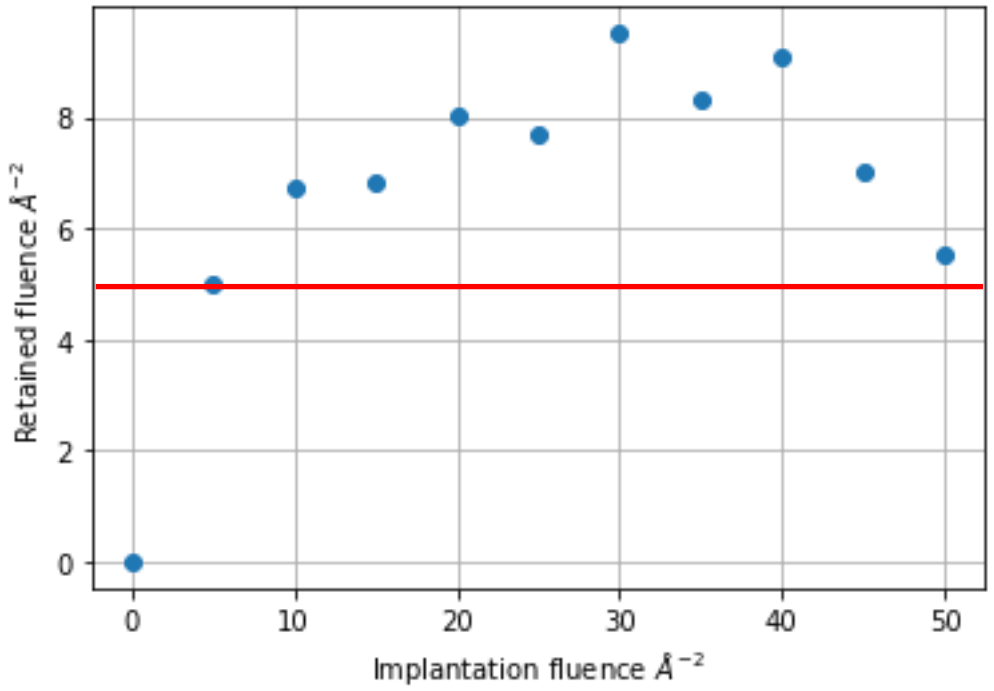


Systematic study with pyrolytic graphite

Simulation

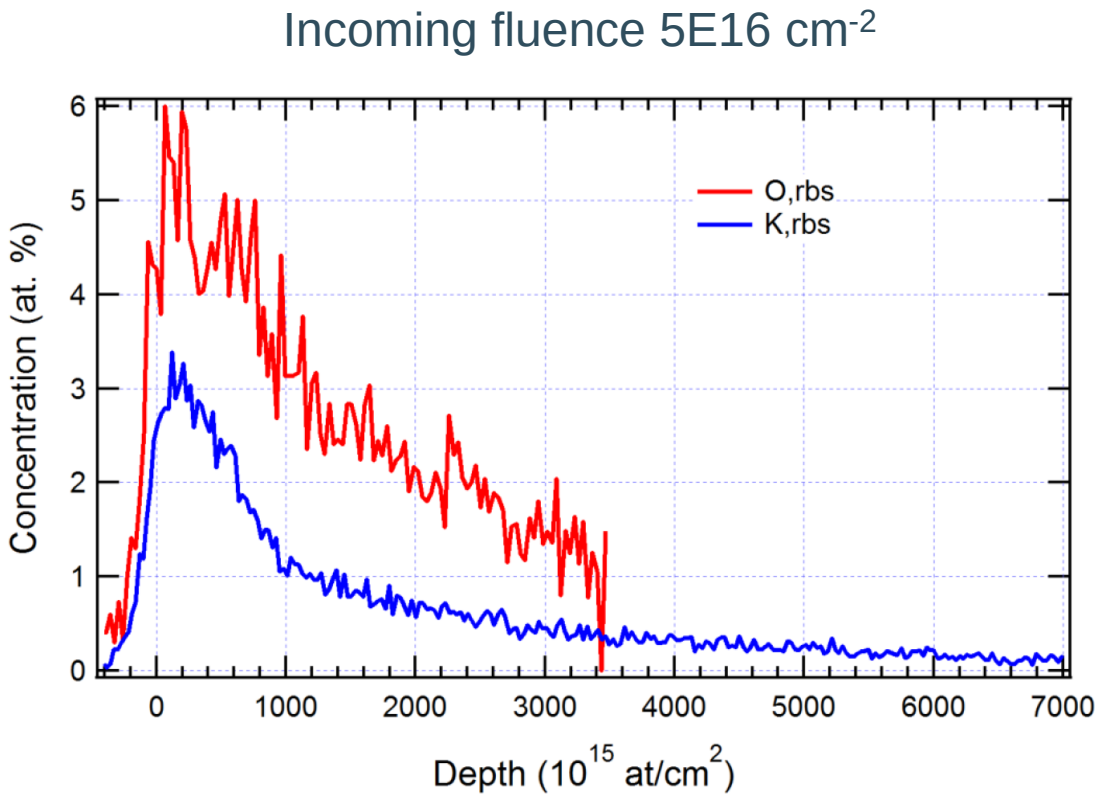


RBS



Why still no agreement?

- Concentration profile of oxygen follows the trend of potassium
- Position of maximum is in agreement with TRIDYN
- Reactions with air → Top layer removed?
- Let's stay with glassy carbon → Implant ~1-1.5E17 cm^{-2} (13-20 µg)
- Suggestion Ulli Koester: Deposit thin layer ~10 nm graphite on top for protection



Meeting with iThemba labs

- They can get several µA of total beam (we need ~9 µAh) → Probably improved with neodymium
- Keep in mind 3-5% of enrichment
- Wiggling around the beam for homogenous distribution should be fine
- Samples for nTof: multiple glassy carbon samples → dissolved and molecular plated. Unlikely to get the desired 100 µg, but 50 µg might be reachable
- They'll do some tests and get back to us in ~2 weeks

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