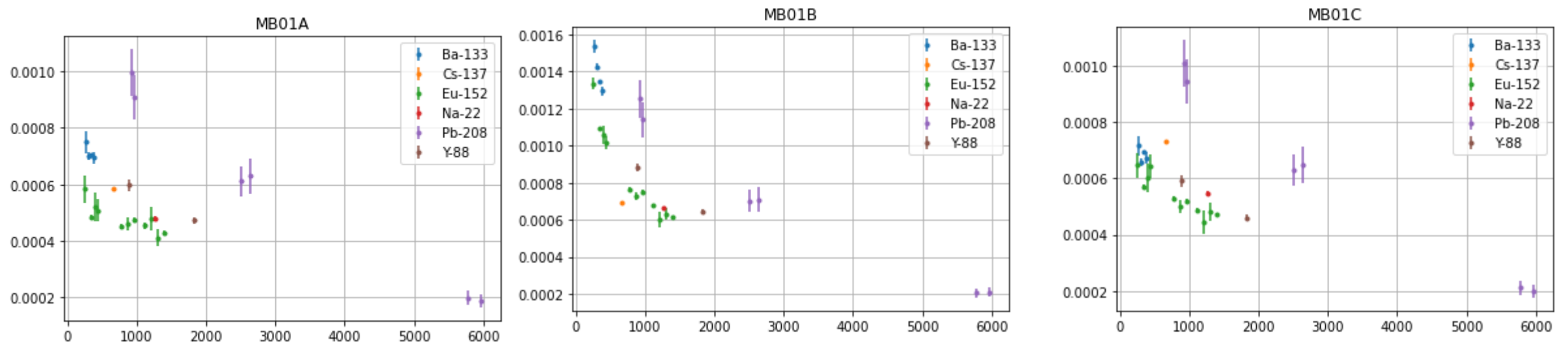


Update muX meeting 24/03

Michael Heines

Efficiency of array



MB01 settings

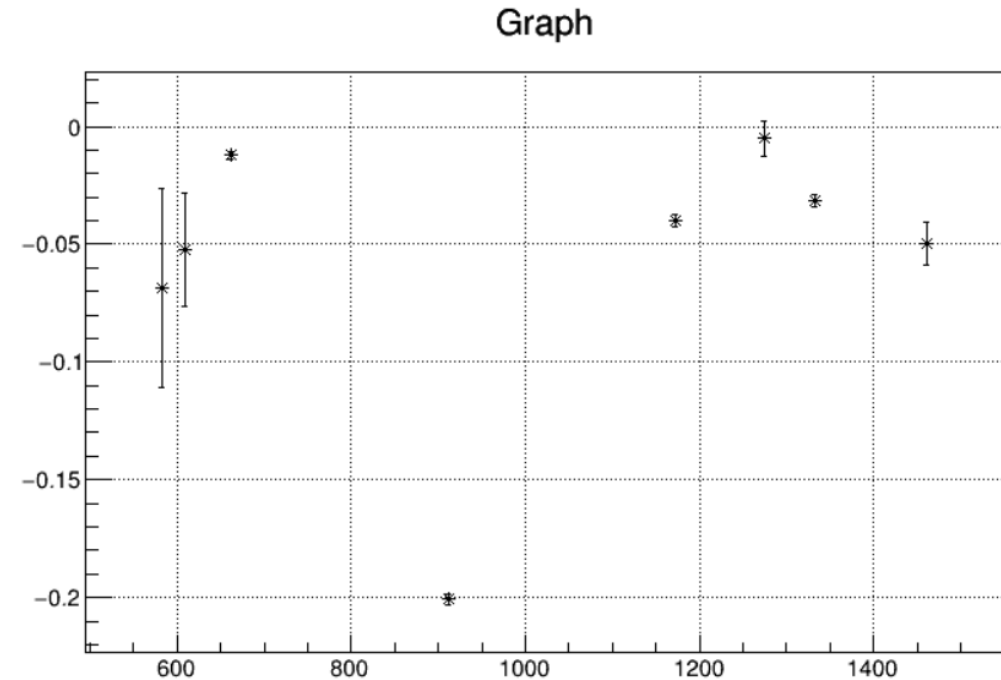
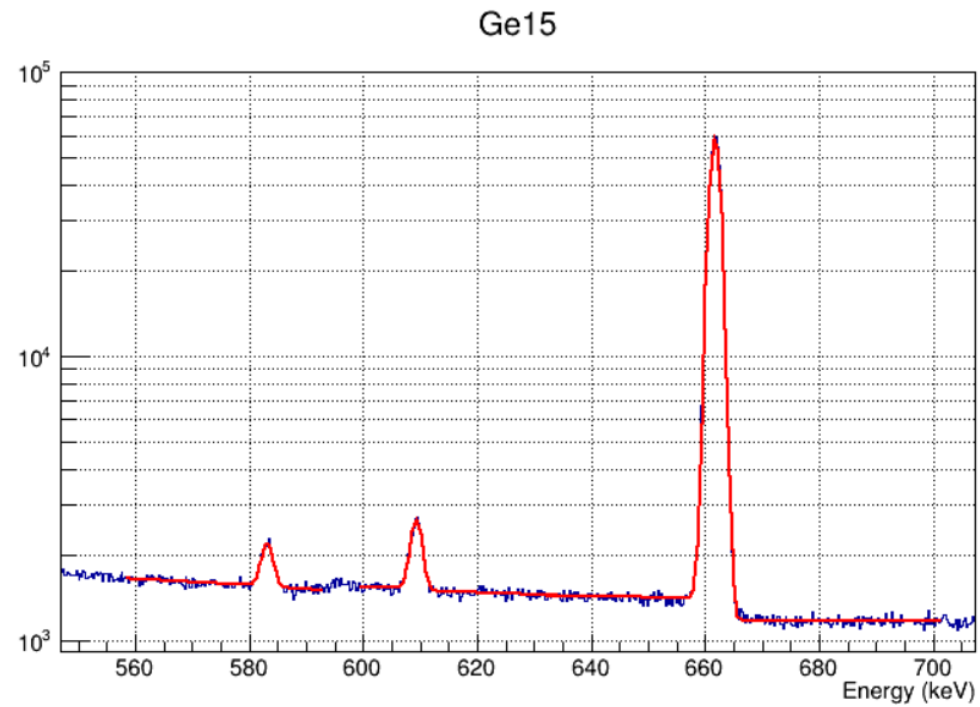
- Run 30220 (lead efficiency)

```
Run 30220
-----
"Info & Status" : {
  "Trigger Gate Length" [ "0x0000bbc", "0x0000bbc", "0x0000bbc", "0x000002c" ]
},
"Data Format & Memory" : {
  "Events Per Bank/key" : { "type" : 6, "num_values" : 4, "access_mode" : 7, "last_written" : 1664481060 },
  "Events Per Bank" : [ "0x00002710", "0x00002710", "0x00002710", "0x00002710" ],
  "Max events per bank/key" : { "type" : 6, "num_values" : 4, "access_mode" : 7, "last_written" : 1664481060 },
  "Max events per bank" : [ "0x00002710", "0x00002710", "0x00002710", "0x00002710" ]
},
"FIR Energy" : {
  "Energy Gap Value/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481060 },
  "Energy Gap Value" : [ "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c" ],
  "Energy Peaking Value/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481060 },
  "Energy Peaking Value" : [ "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000002bc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc" ],
  "Energy Tau Table/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481060 },
  "Energy Tau Table" : [ "0x00000001", "0x00000001", "0x00000001", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000" ],
  "Energy Tau Factor/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481060 },
  "Energy Tau Factor" : [ "0x0000000c", "0x0000000c", "0x0000000e", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a", "0x0000002a" ]
}
```

- Run 30840 (calibration sources)

```
Run 30840
-----
"Info & Status" : {
  "Trigger Gate Length" [ "0x0000d4c", "0x0000bbc", "0x0000ce8", "0x000002c" ]
},
"Data Format & Memory" : {
  "Events Per Bank/key" : { "type" : 6, "num_values" : 4, "access_mode" : 7, "last_written" : 1664481083 },
  "Events Per Bank" : [ "0x00002710", "0x00002710", "0x00002710", "0x00007d0" ],
  "Max events per bank/key" : { "type" : 6, "num_values" : 4, "access_mode" : 7, "last_written" : 1664481083 },
  "Max events per bank" : [ "0x00002710", "0x00002710", "0x00002710", "0x00007d0" ]
},
"FIR Energy" : {
  "Energy Gap Value/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481083 },
  "Energy Gap Value" : [ "0x0000012c", "0x0000012c", "0x0000064", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c", "0x0000012c" ],
  "Energy Peaking Value/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481083 },
  "Energy Peaking Value" : [ "0x000005dc", "0x000005dc", "0x000006a4", "0x000005dc", "0x000002bc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc", "0x000005dc" ],
  "Energy Tau Table/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481083 },
  "Energy Tau Table" : [ "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000", "0x00000000" ],
  "Energy Tau Factor/key" : { "type" : 6, "num_values" : 16, "access_mode" : 7, "last_written" : 1664481083 },
  "Energy Tau Factor" : [ "0x00000030", "0x0000002f", "0x00000030", "0x0000002e", "0x0000002c", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029", "0x00000029" ]
}
```

Recalibration after gain drift correction



Calibration sources for 2023?

Zr-94 + n → Zr-95 at ILL

⁹⁵Zr₅₅

Half life: 64.02 d 5
J^π: 5/2+
S_n (keV): 6462.7 9
S_p (keV): 10597 8
Prod. mode: Fission product
 Fast neutron activation
 Thermal neutron activation

ENSDF citation: NDS 68,635 (1993)
Literature cut-off date: 10-Oct-1995
Author(s): T.W. Burrows
Update: 10-Oct-1995, T.W. Burrows
References since cut-off: [⁹⁵Zr decay from 1995-98 \(NSR\)](#)

Decay properties:

Mode	Branching (%)	Q-value (keV)
β ⁻	100	1124.8 19

Data sets:

Mode	Data set name	Display data
β ⁻	95ZR B- DECAF	

Tables:
ENSDF data:
Java applets:

Gammas from ⁹⁵Zr (64.02 d 5)

E _γ (keV)	I _γ (%)	Decay mode
235.69 2	0.294 16	β ⁻
724.199 5	44.17 13	β ⁻
756.729 12 54		β ⁻

⁹⁵Nb₅₄

Half life: 34.975 d 7
J^π: 9/2+
S_n (keV): 8488.9 20
S_p (keV): 6805.1 20
Prod. mode: Fission product
 Fast neutron activation
 Thermal neutron activation

ENSDF citation: NDS 68,635 (1993)
Literature cut-off date: 10-Oct-1995
Author(s): T.W. Burrows
Update: 10-Oct-1995, T.W. Burrows
References since cut-off: [⁹⁵Nb decay from 1995-98 \(NSR\)](#)

Decay properties:

Mode	Branching (%)	Q-value (keV)
β ⁻	100	925.6 5

Data sets:

Mode	Data set name	Display data
β ⁻	95NB B- DECAF (34.975 D)	

Tables:
ENSDF data:
Java applets:

Gammas from ⁹⁵Nb (34.975 d 7)

E _γ (keV)	I _γ (%)	Decay mode
204.117 2	0.028 9	β ⁻
561.67 10	0.013 3	β ⁻
765.794 7	100	β ⁻

At ISOLDE

⁸³Rb₄₆

Half life: 86.2 d 1
J^π: 5/2-
S_n (keV): 10955 9
S_p (keV): 5773 6
Prod. mode: Photon reaction
 Fast neutron activation

ENSDF citation: NDS 66,281 (1992)
Literature cut-off date: 1-Nov-1991
Author(s): E. Browne
References since cut-off: [⁸³Rb decay from 1991-98 \(NSR\)](#)

Decay properties:

Mode	Branching (%)	Q-value (keV)	References
ε	100	909 7	78Va03 88Al01

Data sets:

Mode	Data set name	Display data
ε	83RB EC DECAF	

Tables:
ENSDF data:
Java applets:

Gammas from ⁸³Rb (86.2 d 1)

E _γ (keV)	I _γ (%)	Decay mode
9.396 7		ε
32.1473 16		ε
119.2 2	0.0143 22	ε
128.55 12	0.00134 22	ε
237.19	<0.00049	ε
520.39 1	44.7 22	ε
529.635 9	29.3 13	ε
552.63 2	16.0 7	ε
562.16 7	0.0085 9	ε
648.9 1	0.085 5	ε
681.0 2	0.031 5	ε
790.0 4	0.657 18	ε
799.26 29	0.237 9	ε

Calibration sources for 2023

- Easy sources

- ^{133}Ba : 276 keV, 303 keV, 356 keV, 384 keV
- ^{60}Co : 1173 keV, 1332 keV
- ^{88}Y : 898 keV, 1836 keV → Maybe need a new source
- ^{22}Na ?: 1274 keV

- Harder sources

- ^{83}Rb : 520 keV, 530 keV, 553 keV
- ^{95}Zr : 724 keV, 756 keV, 766 keV

Potassium 2p-1s: 713 keV

Radium: 5 → 4 and 4 → 3 for quadrupole?

Neutron damage

