MEASUREMENTS OF ACTIVITY IN BIOLOGICAL SAMPLES AND PREPARATION OF TARGETS FOR NUCLEAR PHYSICS

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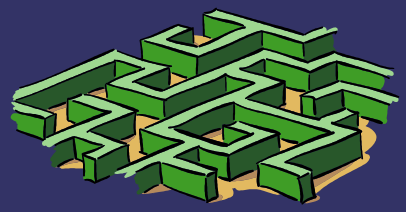
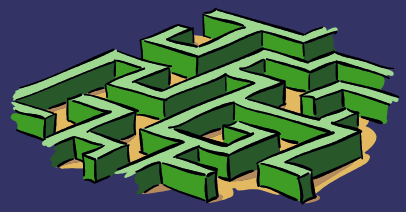


MEASUREMENTS OF ACTIVITY IN BIOLOGICAL SAMPLES

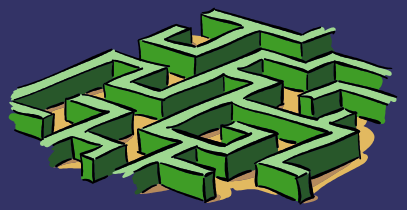


PICTURES OF MUSHROOMS

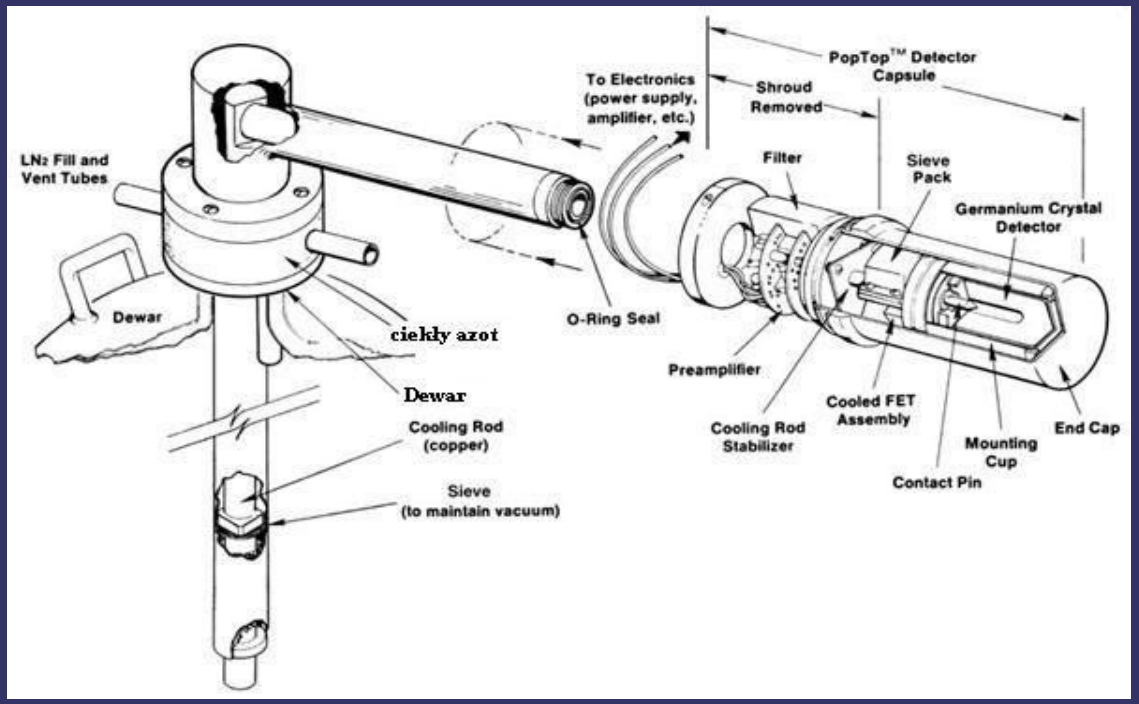
Xerocomus quel

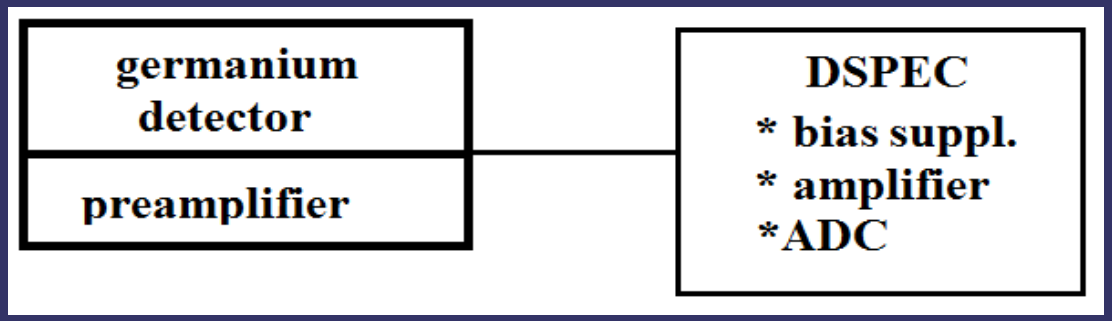
Boletus

Suillus gray



MATERIAL AND METHOD

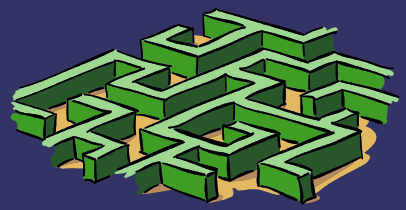




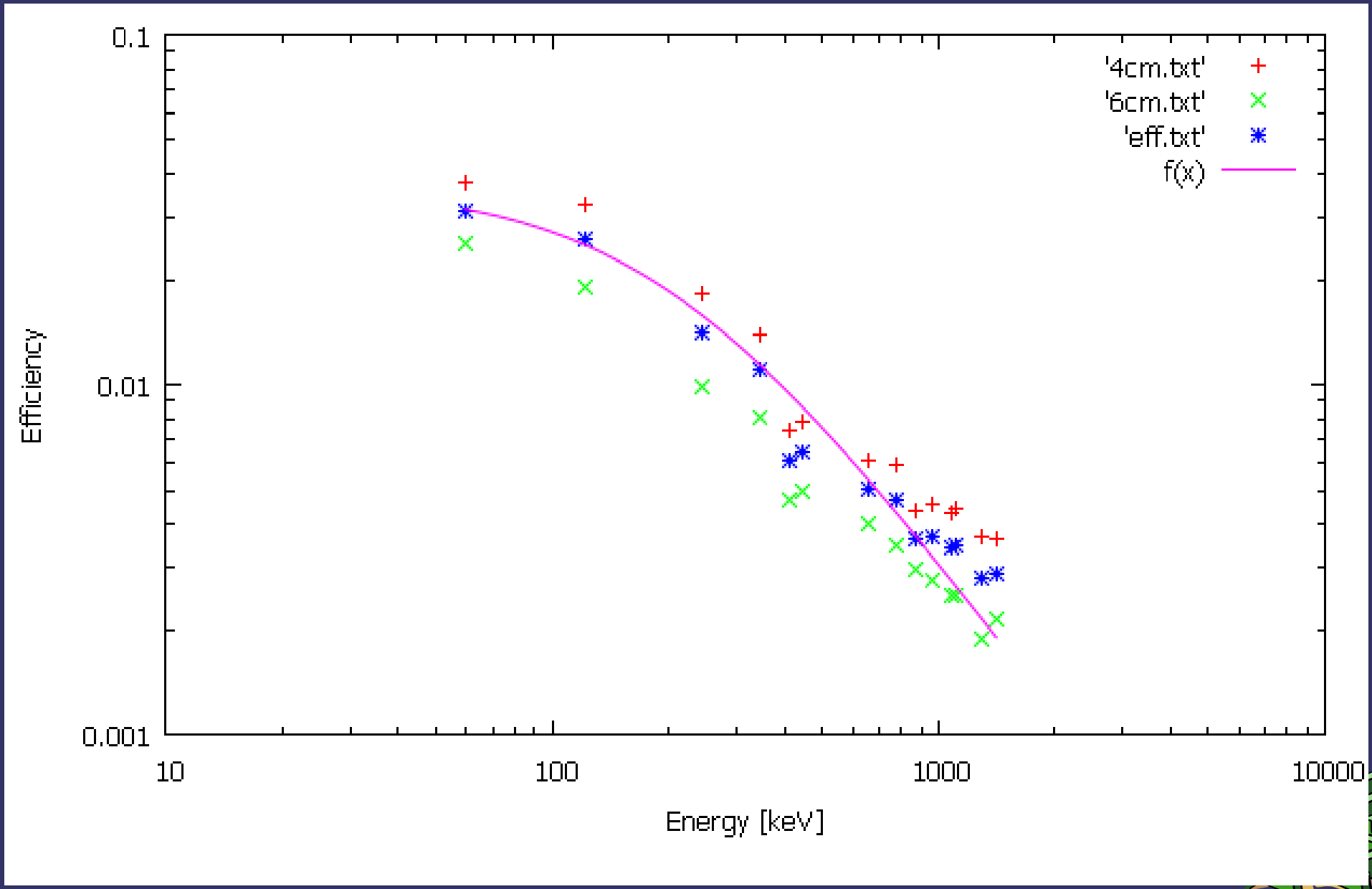
ENERGY CALIBRATION

$$E=C*ch^2+B*ch+A$$

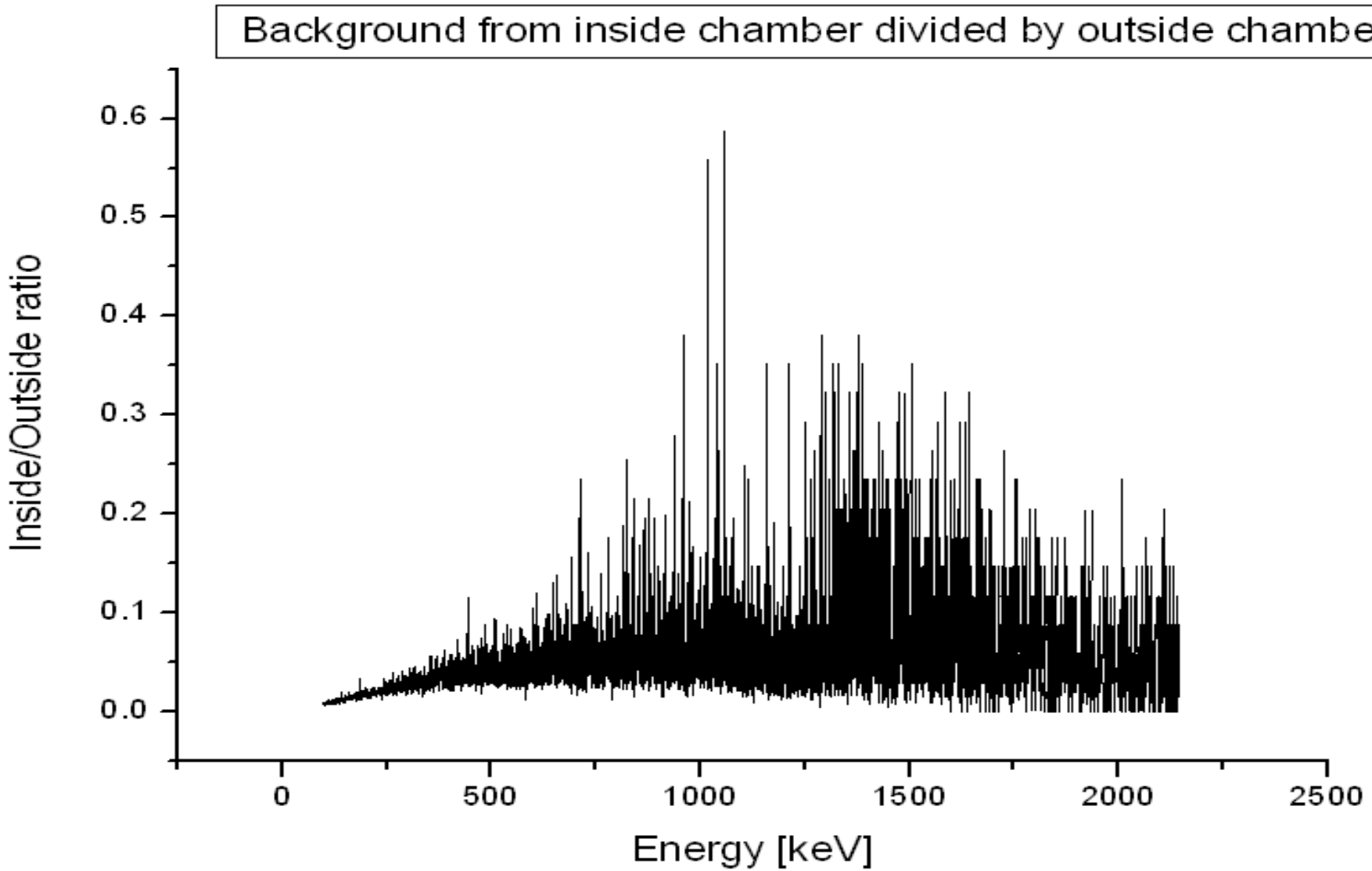
A= -0.1 [keV]
B= 0.2608 [keV/ch]
C= 1E-007 [keV/ch²]



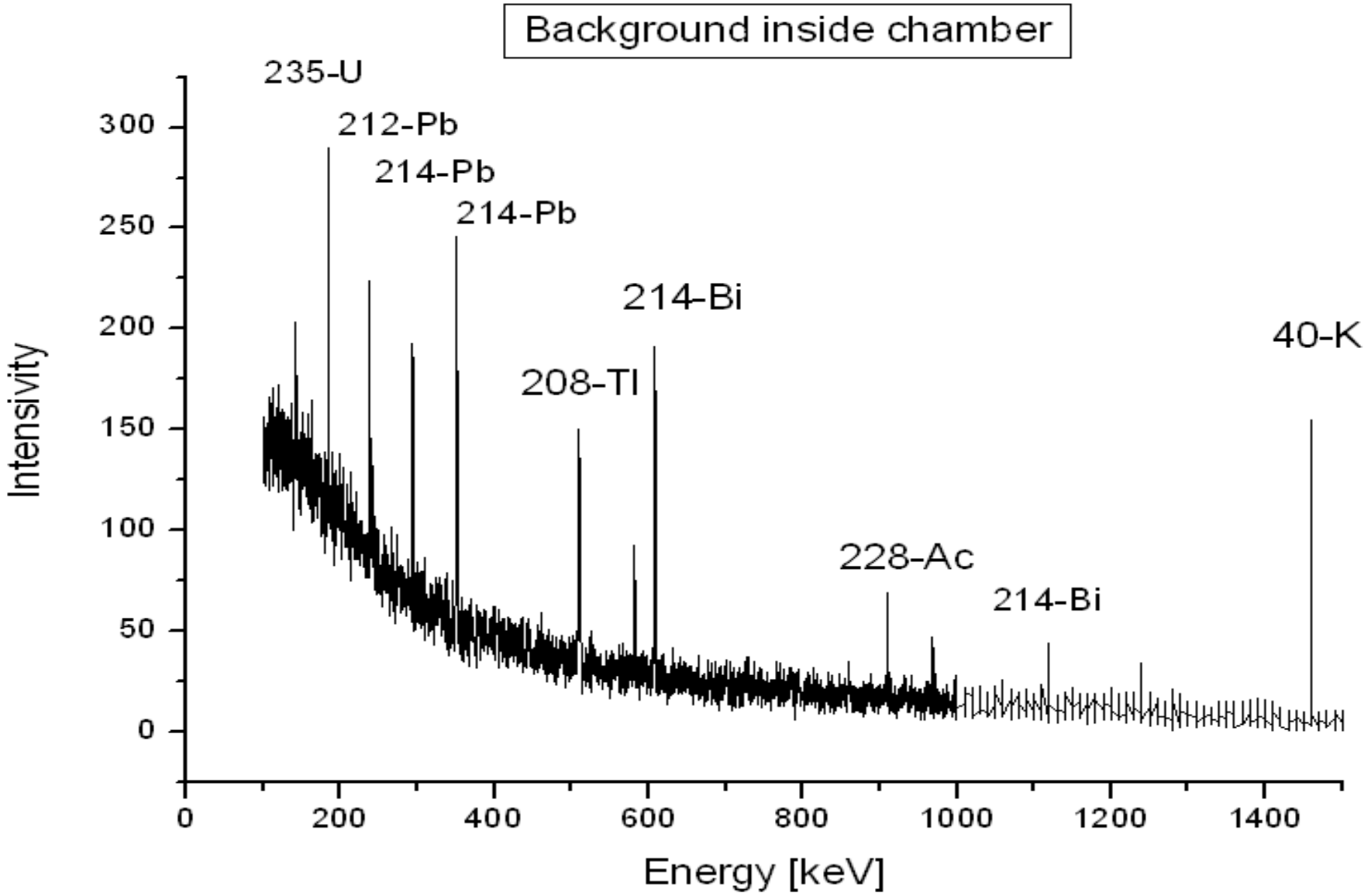
EFFICIENCY CALIBRATION



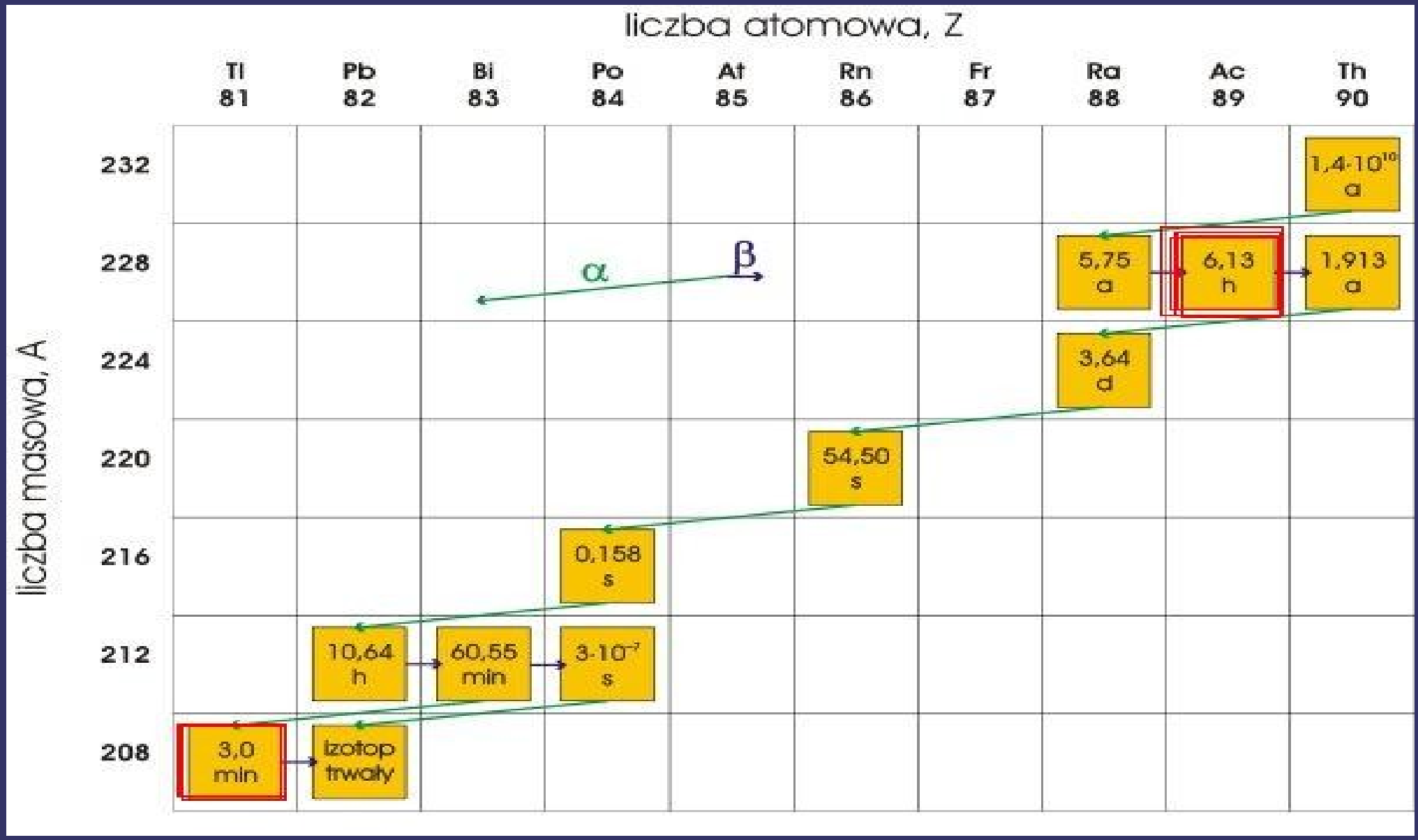
COMPARISON OF BACKGROUND INSIDE AND OUTSIDE SHIELDING



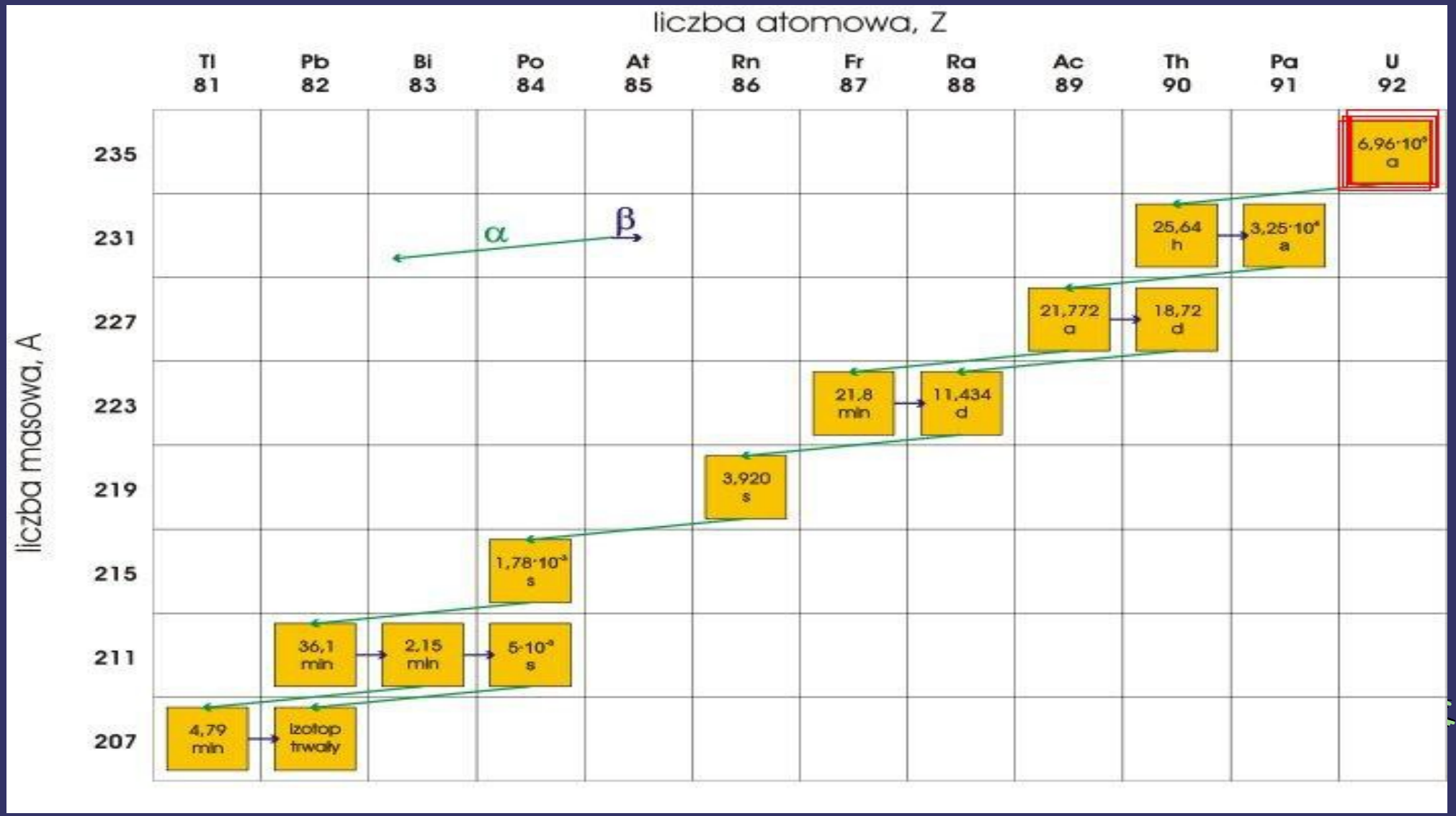
WHAT WE FOUND IN BACKGROUND?



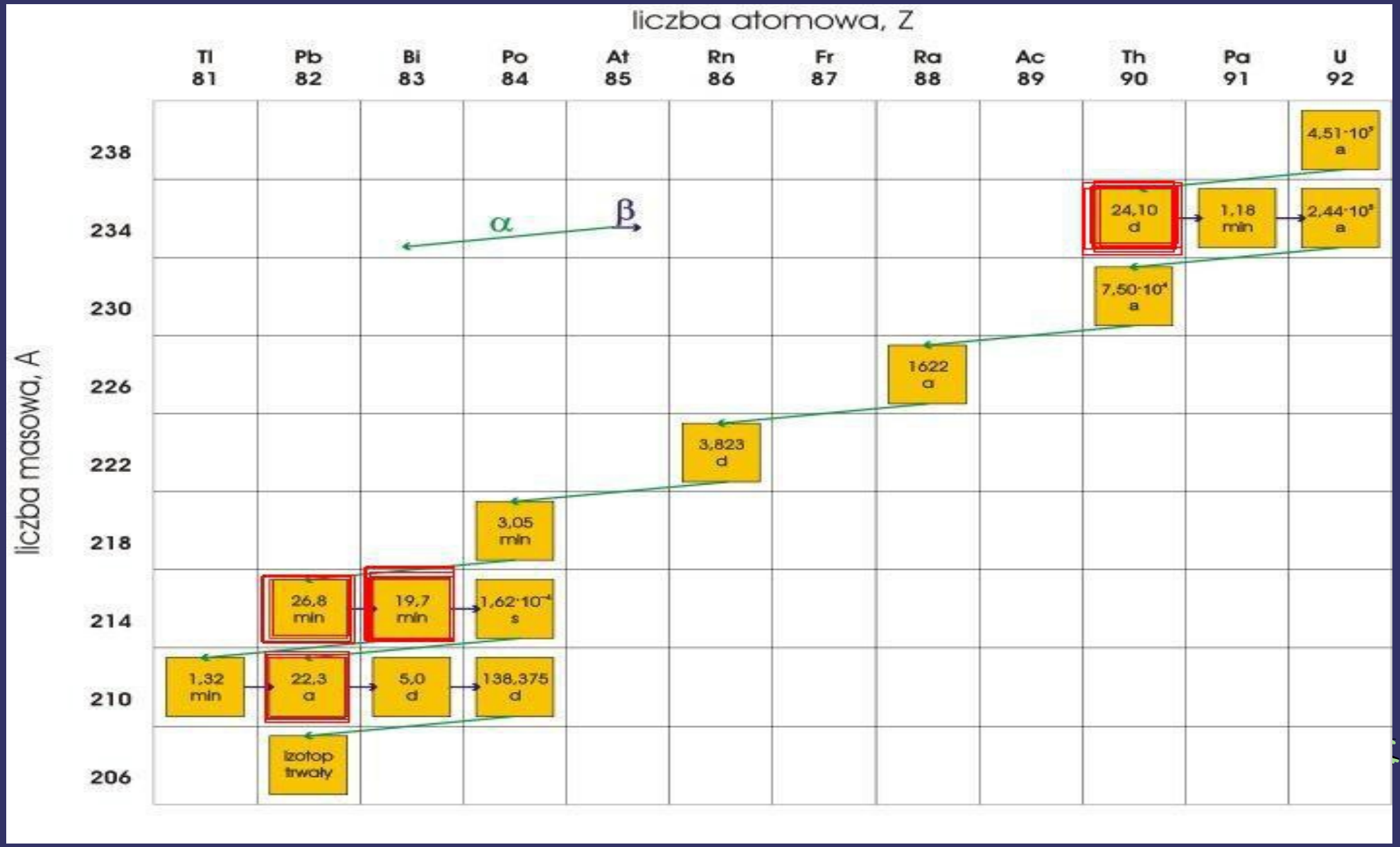
THORIUM FAMILY



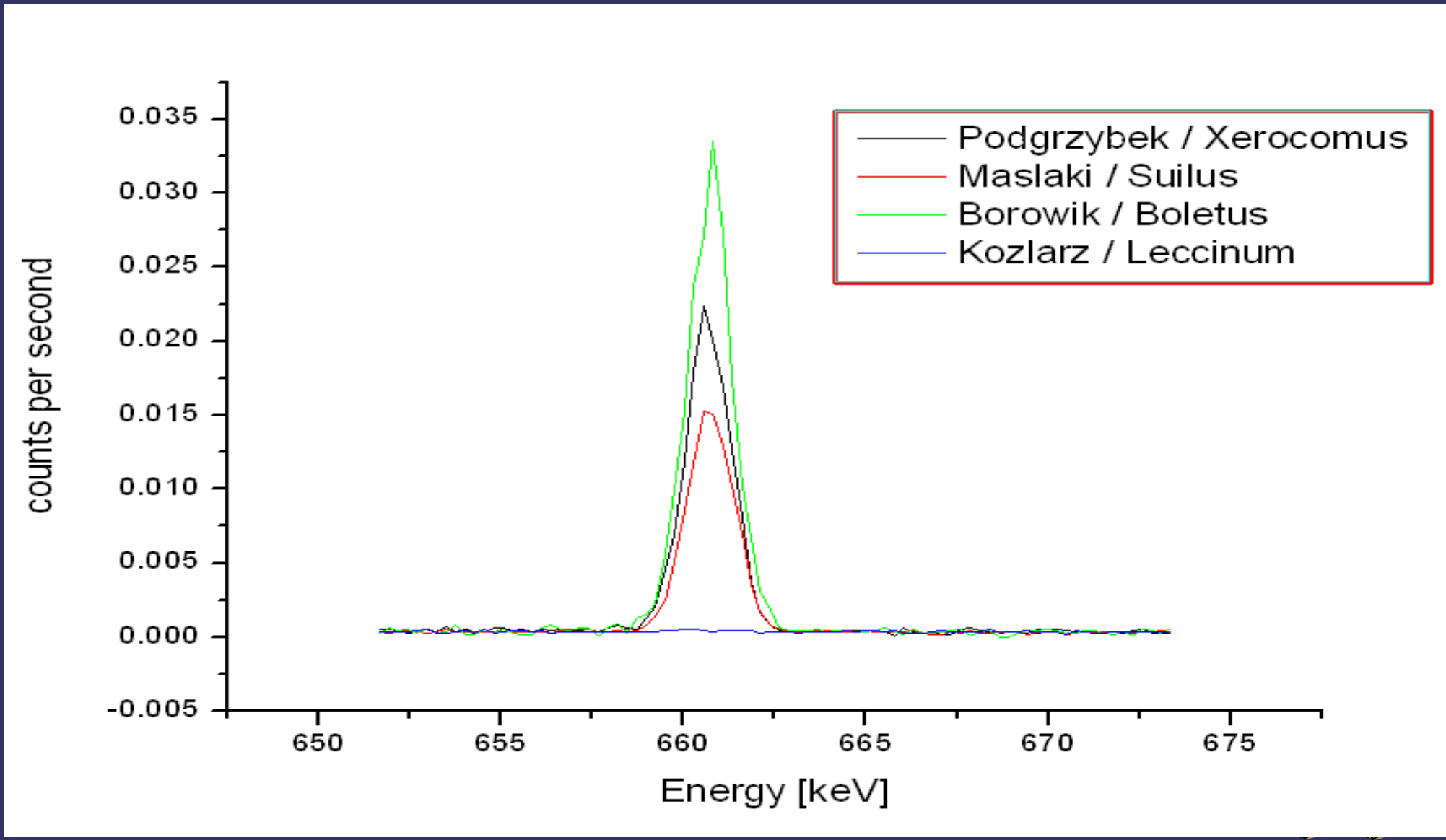
ACTINIUM FAMILY



RADIUM FAMILY



137- CESIUM PEAK FOR 4 KINDS OF MUSHROOMS



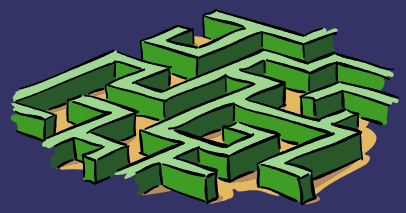
RESULTS

	Activity (Bq)	Weight (g)	Dose/weight (uSv/g)	Dose/weight error [%]	Kg for 5mSv
Xerocomus	21.12	8.05	0.034	2.0	147
Suillus	16.11	9.20	0.023	1.3	220
Boletus	36.85	10.75	0.045	2.0	112

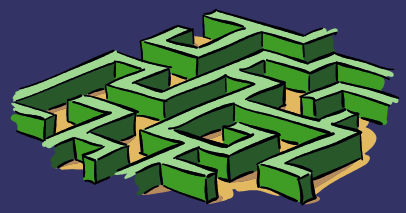
CONCLUSION

EATING MUSHROOMS IS SAFE

Why are mushrooms keeping more radioactive than anothers biological samples? Norbadium A



PREPARATION OF TARGETS FOR NUCLEAR PHYSICS

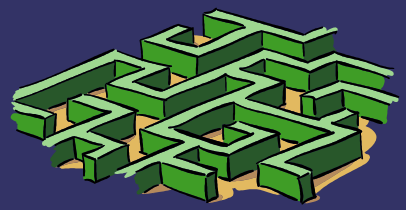


GOAL

- Preparation of targets
- To measure the thickness of the targets

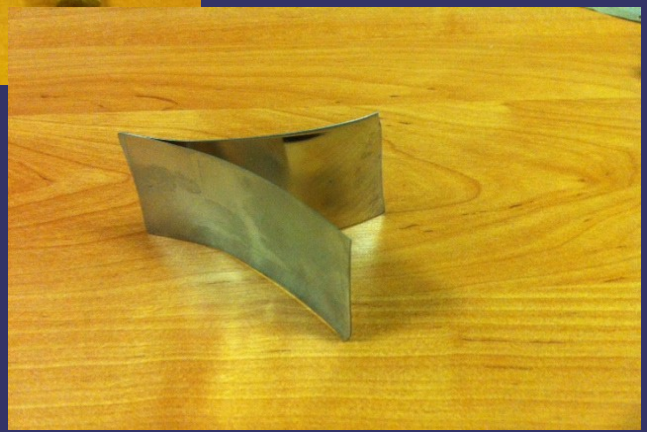
How?

-Rolling and evaporation
-Measurement of alpha energy loss



ROLLING

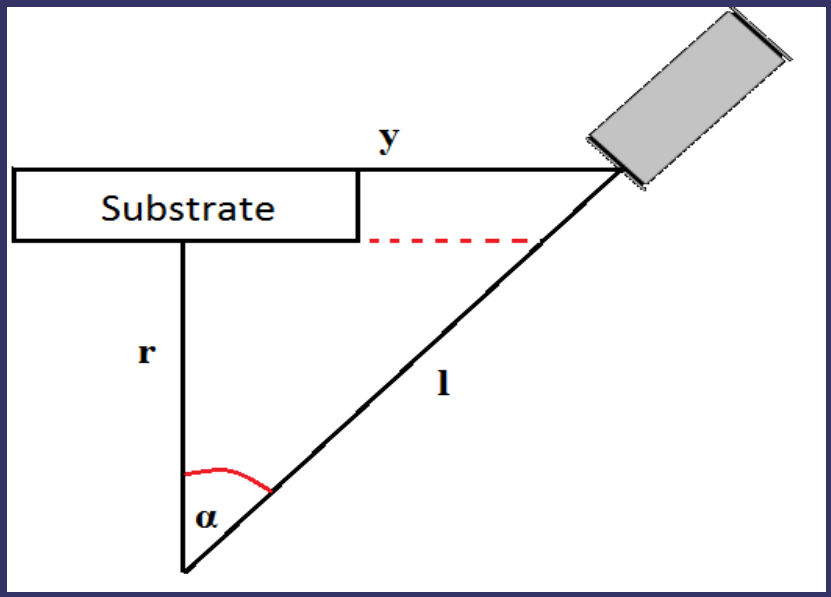
- Preparation of sandwich and insert aluminium foil into it
- Rolling to obtain a specified thickness
- Meaurement the thickness using an induction device



EVAPORATION

- To calculate the tooling factor
- To cover the microscope slide with betaine or another parting agent
- Quartz indicated the thickness of the evaporated material and rate of the process

$$T = \left(\frac{l}{r}\right)^2 \cdot 100 \cdot \frac{1}{\cos\alpha}$$

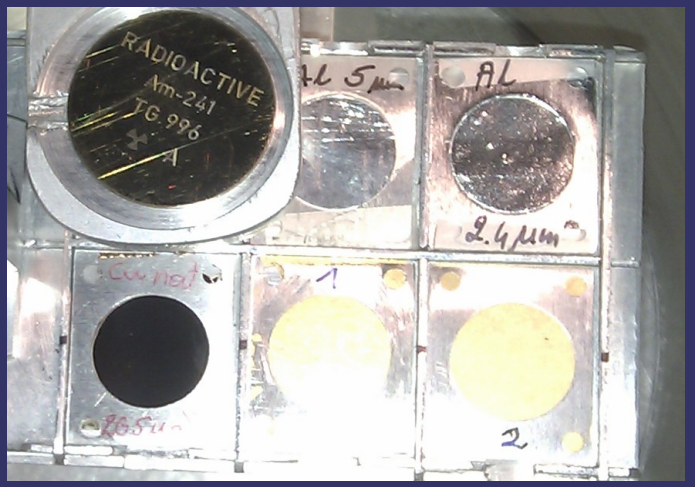


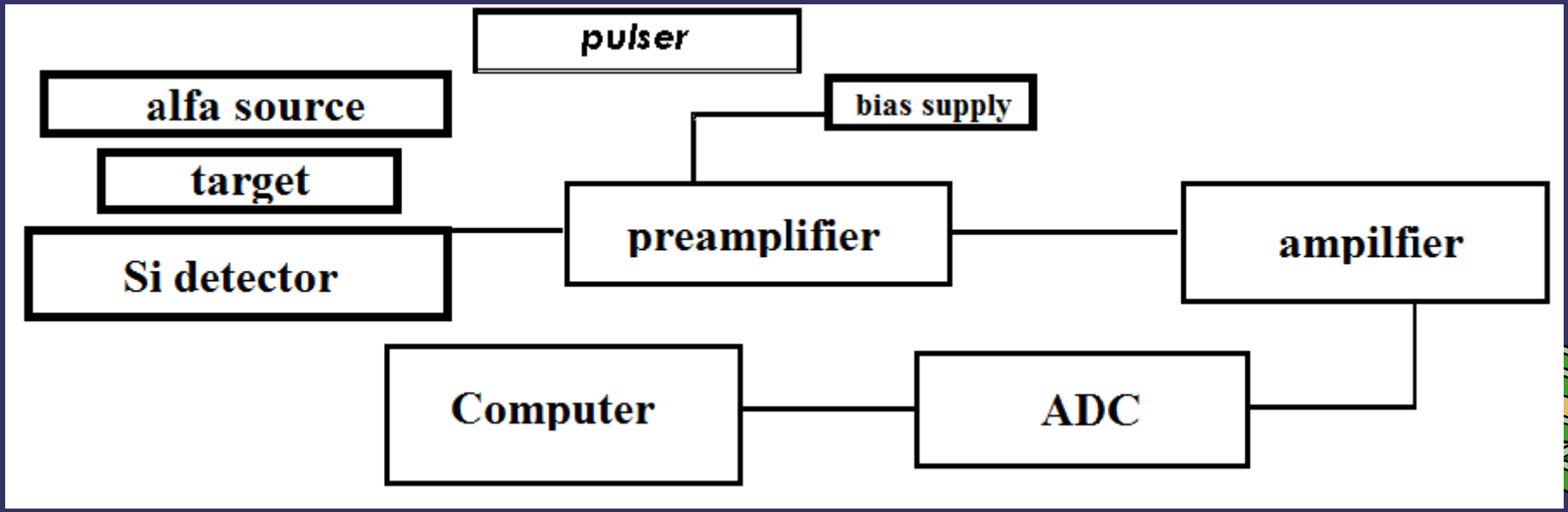
TARGETS

- To put the microscope slide inside the dish with water in order to separate the gold foil
- Fishing gold foils from the water on the frame
- Leaving the foils to dry

SETUP FOR ALPHA ENERGY MEASURMENT

Empty	Aluminium 1	Aluminium 2
Copper	Gold 1	Gold 2

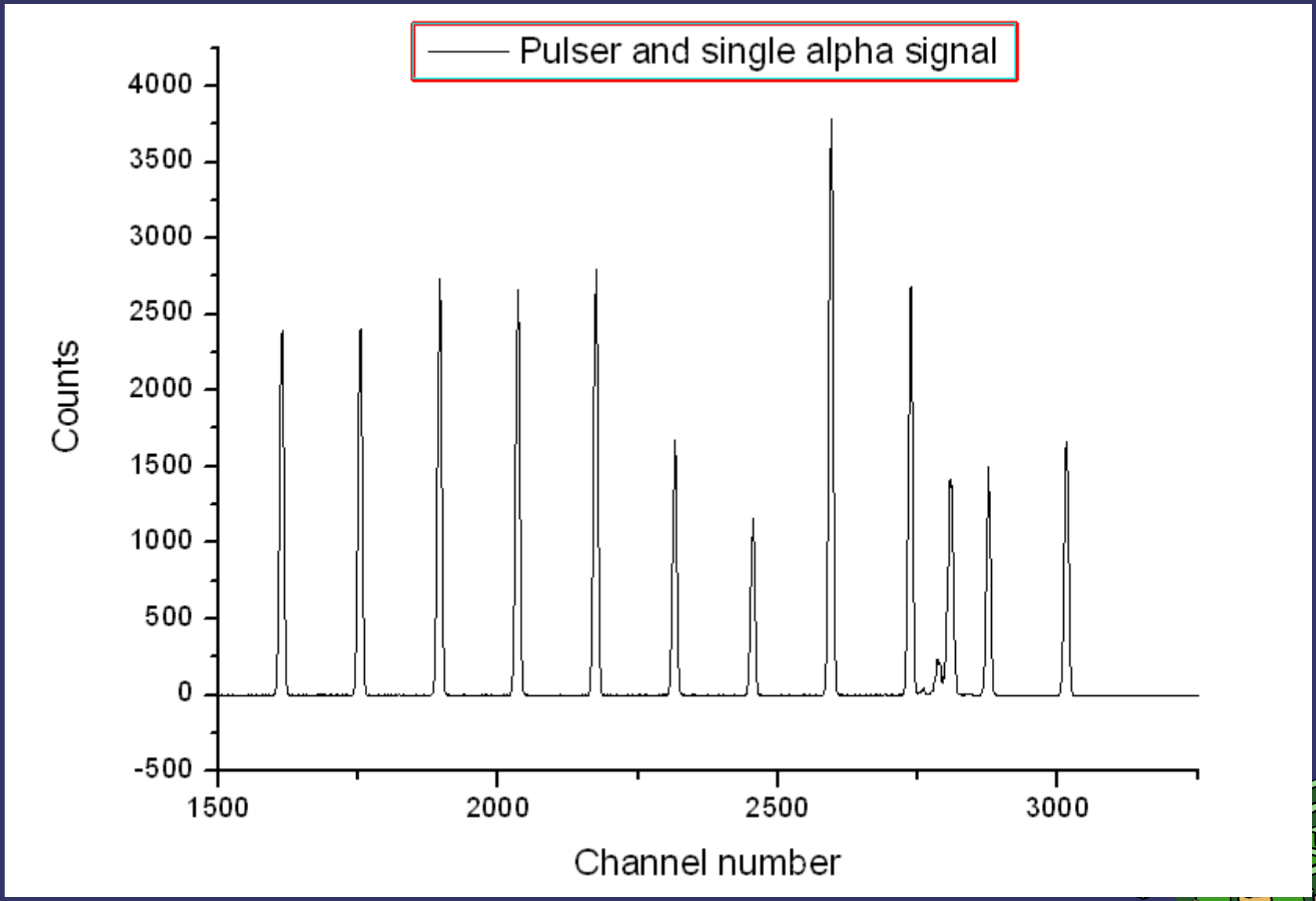




CALIBRATION

U=A*ch+B

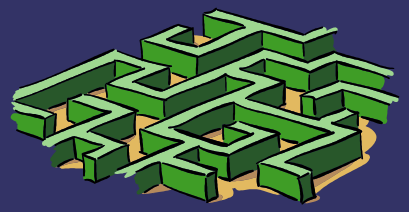
E=a*ch+b



THICKNESS DETERMINATION

- Energy loss = initial α energy –α energy after passing through material.

Thickness= energy loss / stopping power

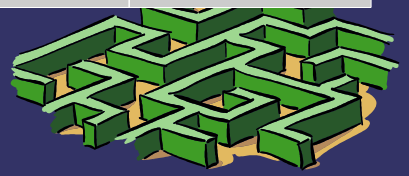


RESULTS

	^{241}Am	Alluminium 1	Alluminium 2	Gold 1	Gold 2	Copper
Energy [MeV]	5.48	4.674	5.079	5.454	5.451	5.325
Energy loss [Mev]		0.810	0.405	0.030	0.033	0.159
Thickness [ug/cm2]		1421	710	134	148	394
Thickness error [ug/cm2]		52	26	13	14	76

Stopping power	Alluminium	Gold	Copper
keV/ (ug/cm2)	0.568	0.2252	0.4032

Induction measurement	Al 1	Al 2
Thickness [ug/cm2]	1360	598.4-652.8



THANK YOU FOR YOUR ATTENTION