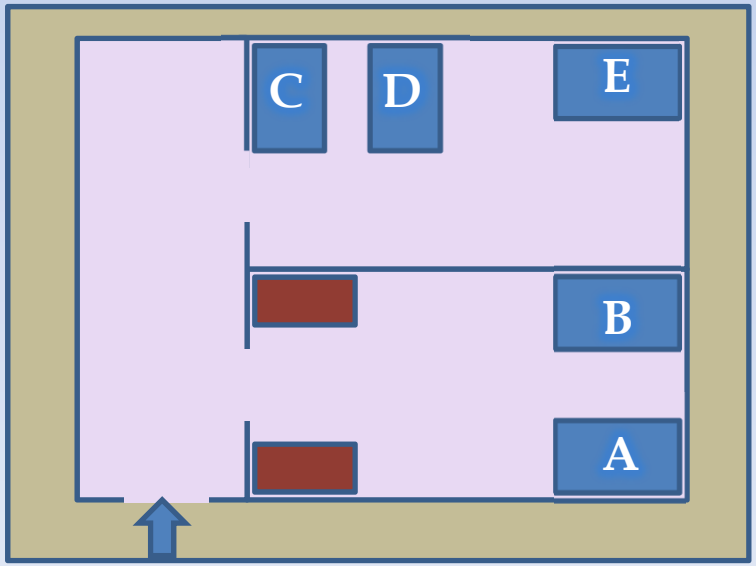
SEVERAL IMPROVEMENTS IN JASNAPP SPECTROSCOPY LABORATORY
&
PRELIMINARY RESULTS OF QUINTA MARCH 2011 RUN

JASNAPP LABORATORY

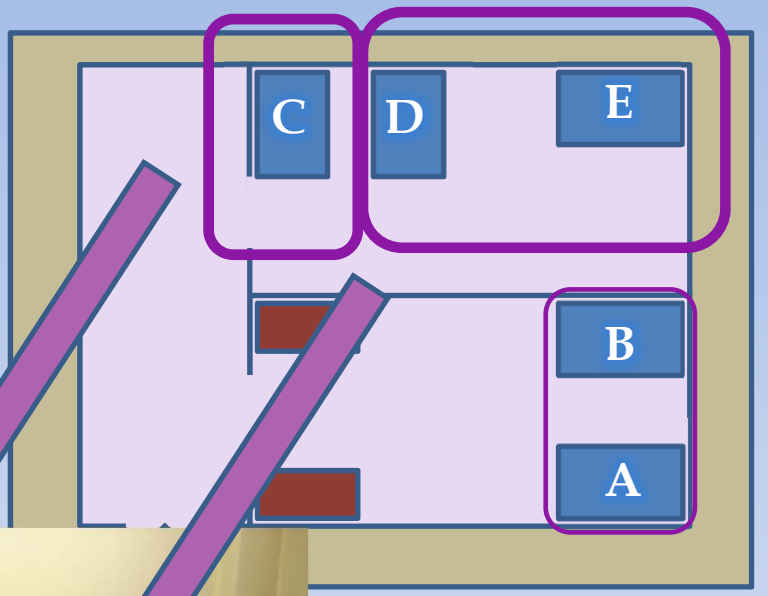
Sign	Name	Detection Range [keV]	FWHM at 1332.5 keV
A	CANBERRA	~30 - 3000	1.97
B	ORTEC OLD	~30 – 3000	2.06
C	ORTEC NEW 2	~30 – 3000	1.93
D	ORTEC PLANAR	~5 – 700	
E	ORTEC NEW	~30 – 3000	1.93

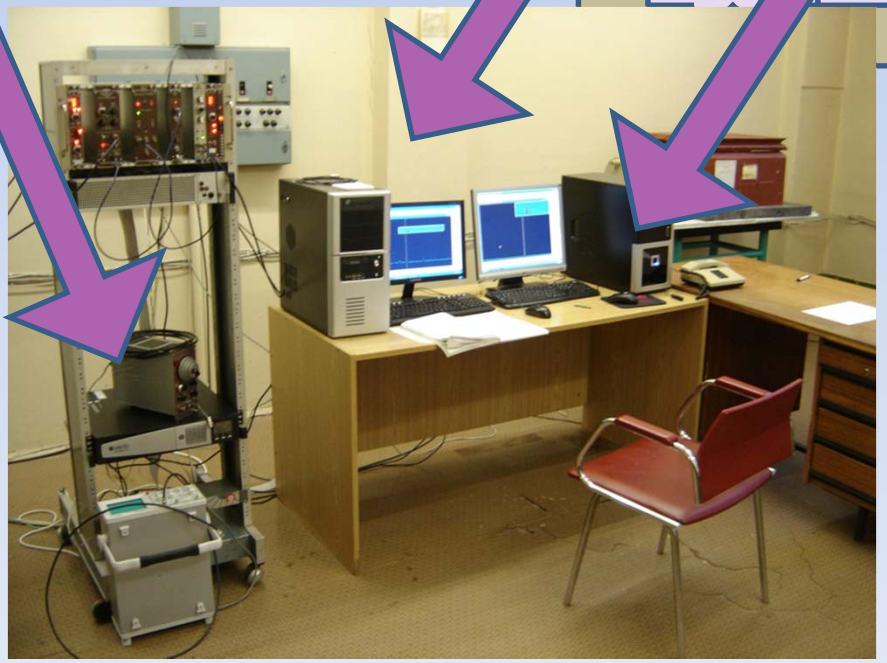


WHAT'S THE NEWS?

- UPS
- Computer for "C" detector
- Calibration samples
- Nonlinearity measurements

UPS & PC for C det





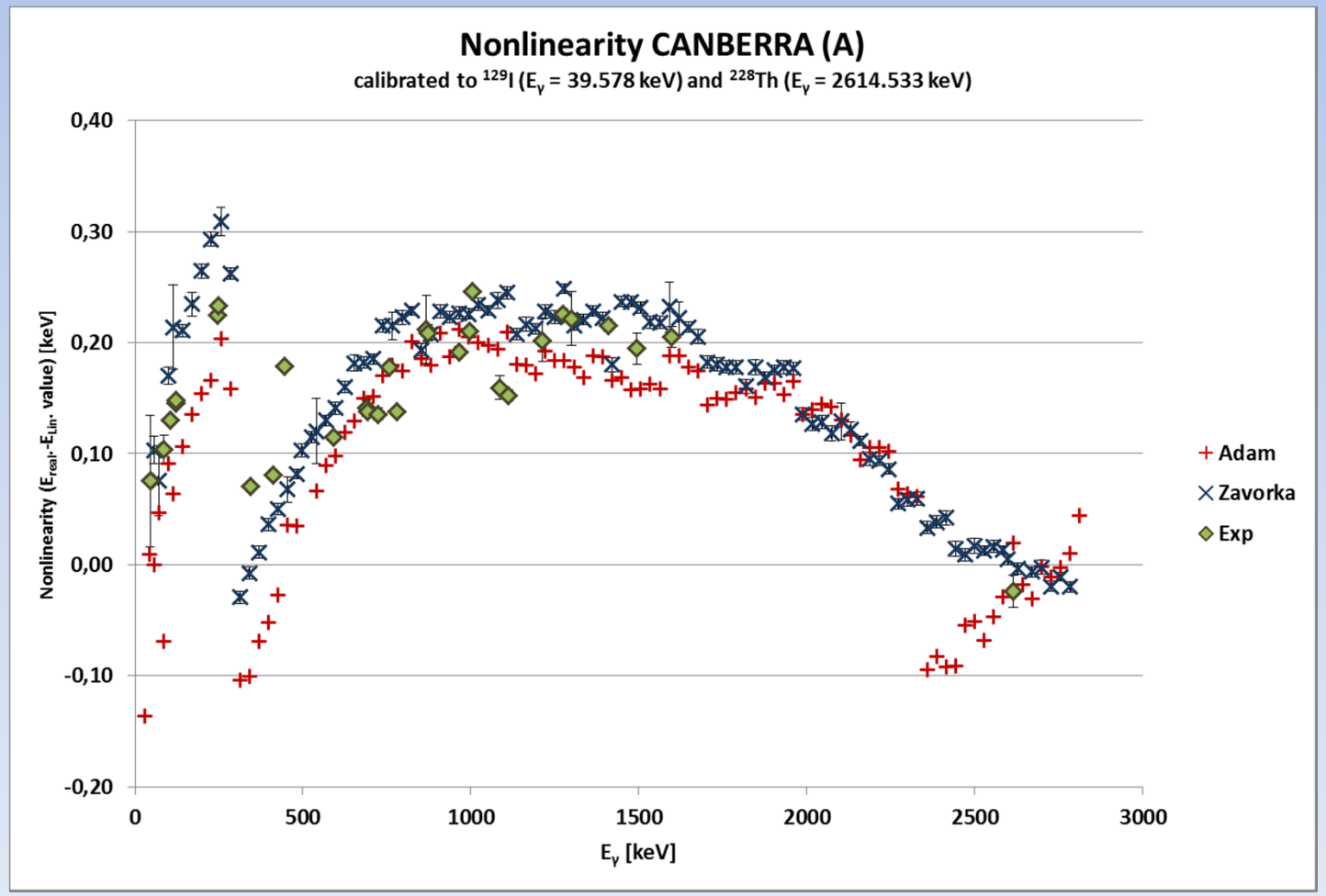
CALIBRATION SAMPLES

Isotope	Half -life
Mn-54	312 d
Co-57	272 d
Co-60	5.2 y
Y-88	107 d
Sn-113	115 d
Ba-133	10.5 y
Cs-137	30 y
Ce-139	138 d
Eu-152	13 y
Th-228	2 y
Am-241	432 y

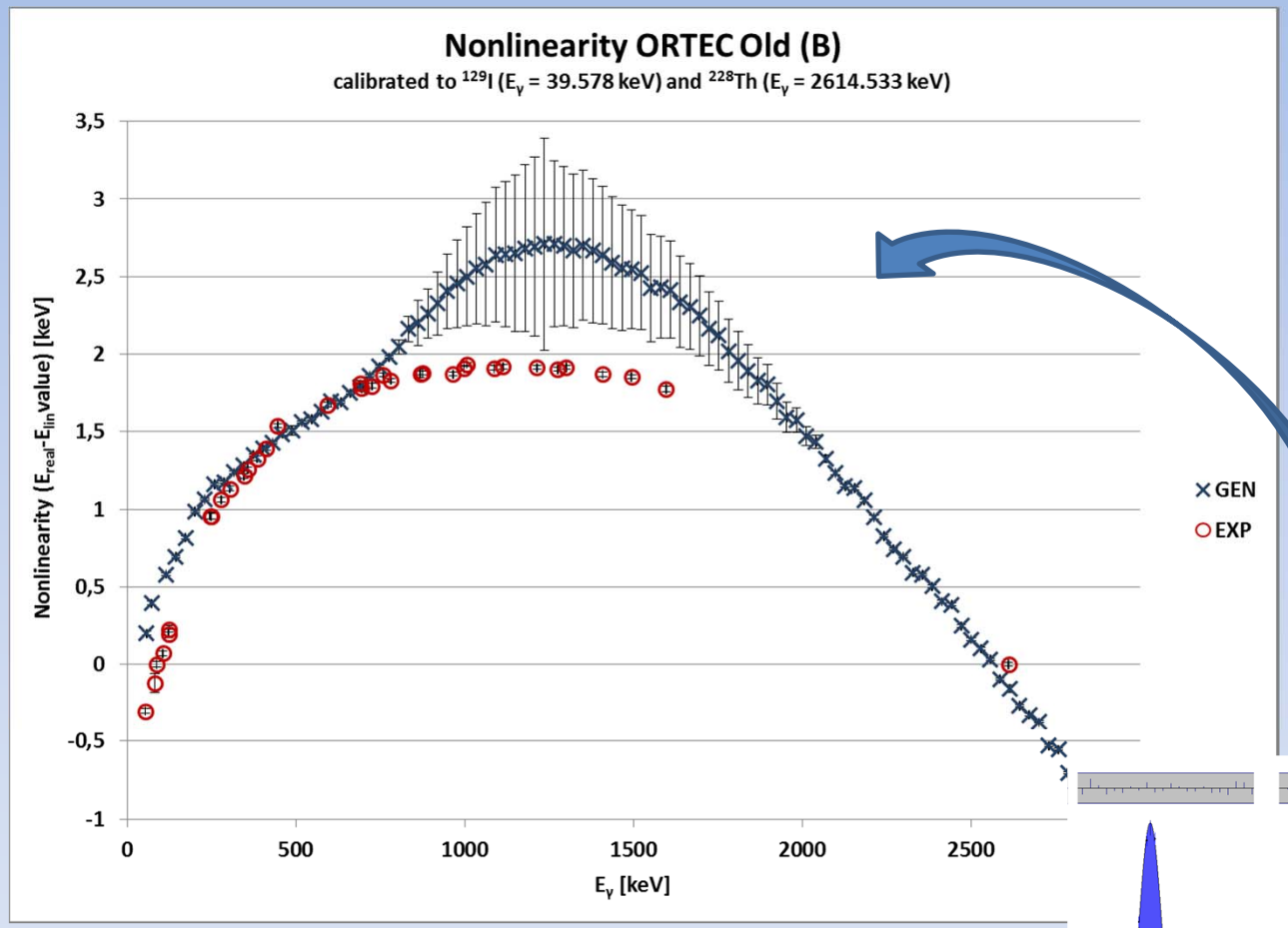
~ 10 – 2615 keV

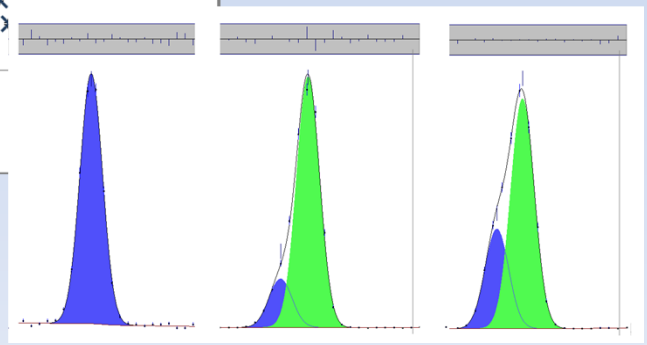
NONLINEARITY MEASUREMENTS

ORTEC Pulser + Calibration samples



NONLINEARITY MEASUREMENTS





QUINTA March 2011 RUN

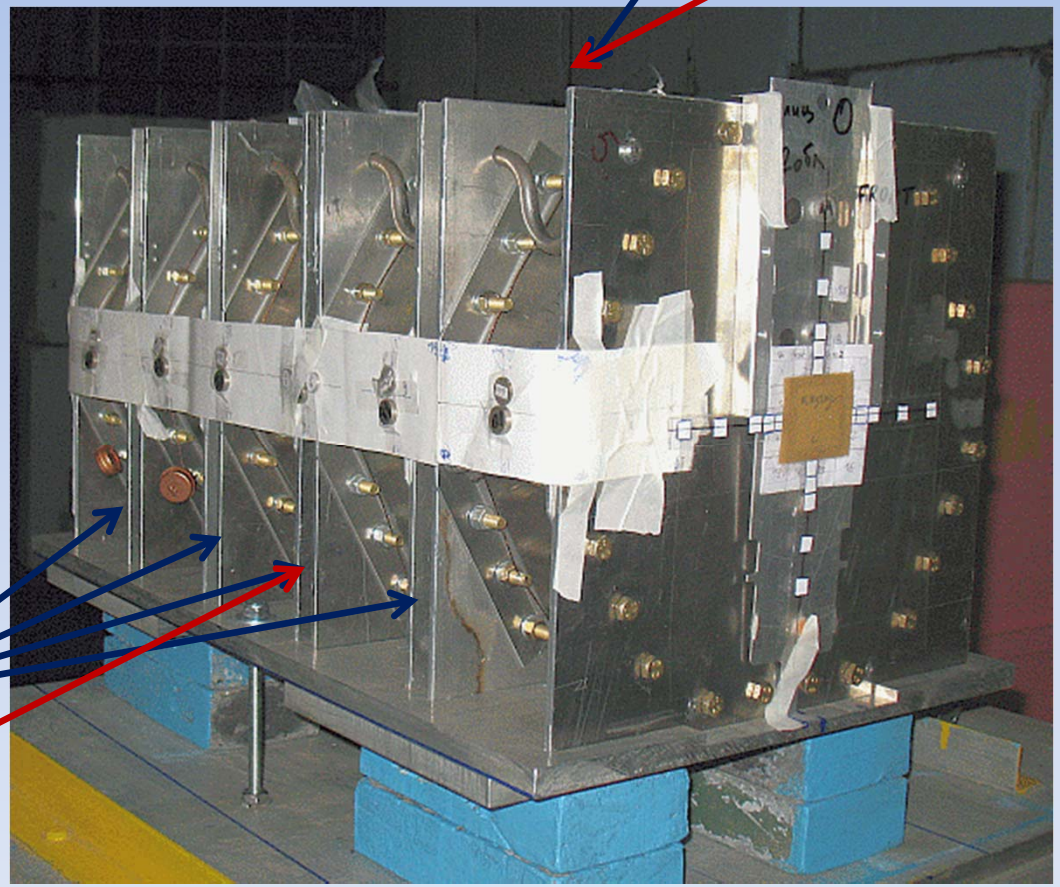
Ed = 2 , 4 , 6 GeV:

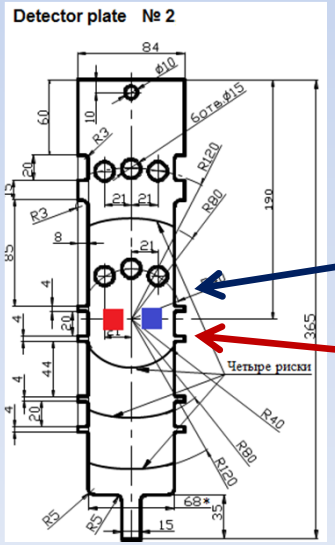
^{nat}Th, ^{nat}U samples
inside target assembly

Ed = 6 GeV:

^{nat}Th, ^{nat}U ,^{235}U
on the top of Quinta

On the top of 2nd section: Th, ^{nat}U, ^{235}U





In the center:

Th

U

DATA PROCESSING

- Activation measurement technique
- Reaction rate: $R = (A_r, Z_r) = \frac{Q(A_r, Z_r)}{N_t N_d}$

  (Number of produced residual nuclei Q per atom of the sample N_t per deuteron per second N_d)
- Corrections: gamma line intensity, dead time, decay, detector efficiency, beam instability, self-absorption
- Different detectors, positions, time of meas.

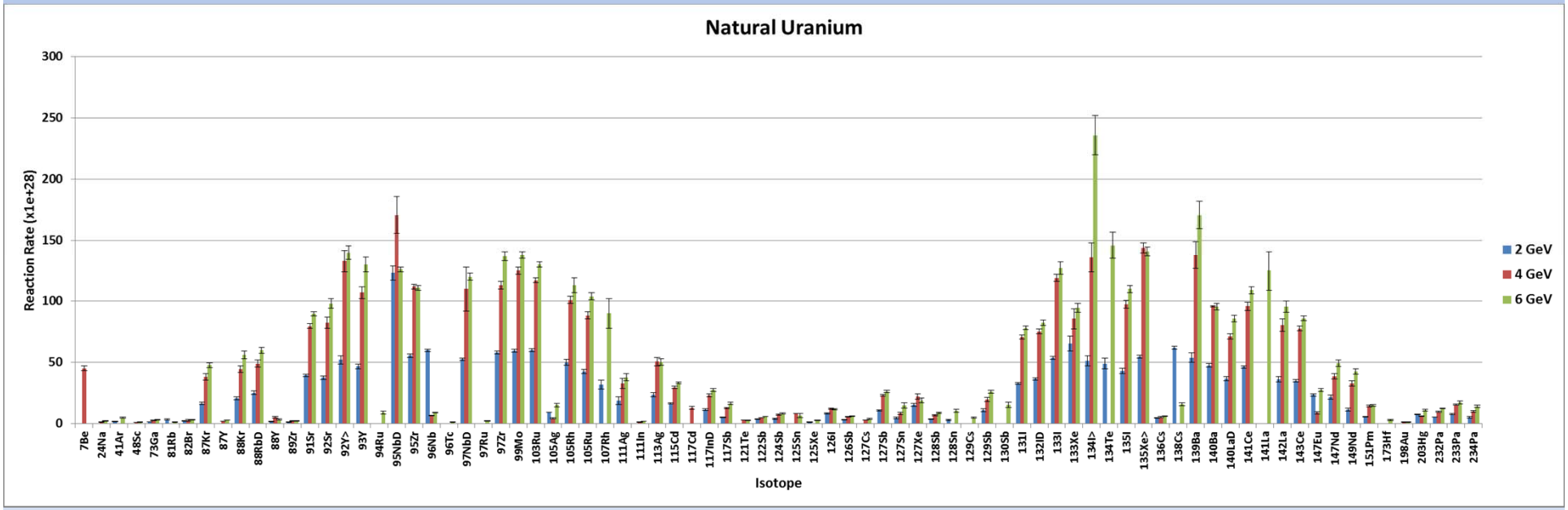
URANIUM INSIDE

- Up to 300 lines in measured spectra

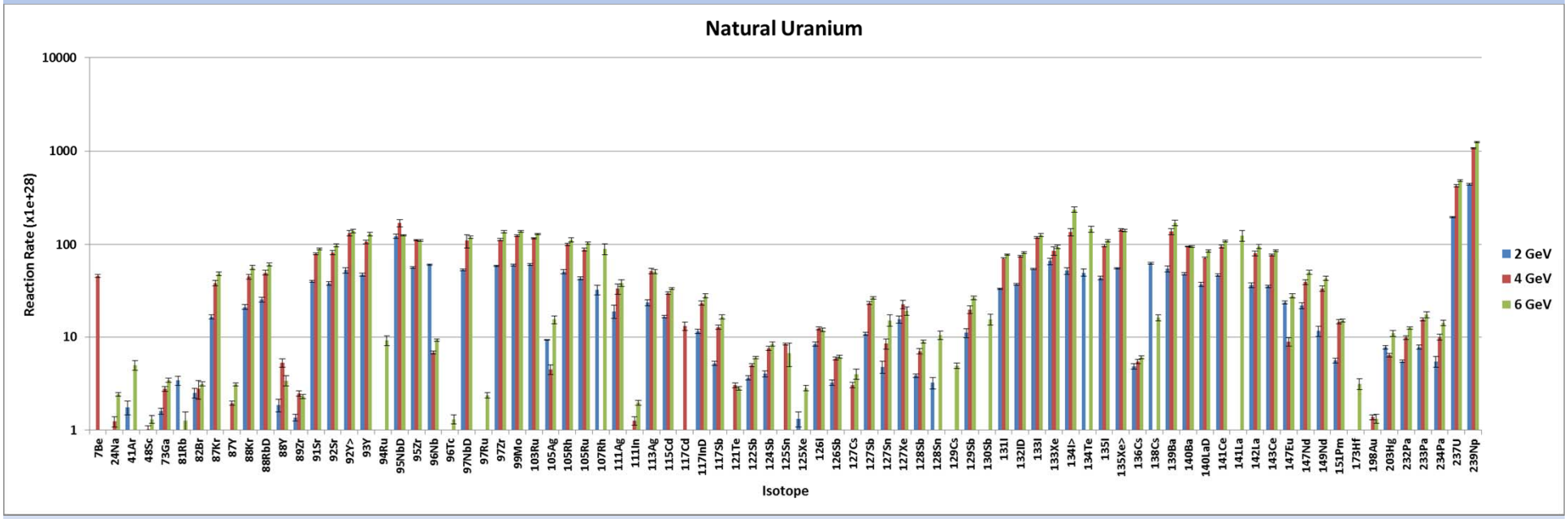
- Determination of isotopes:
- Half-life
- Energy and intensity of gamma line

- **Observed more than 100 residual nuclei**

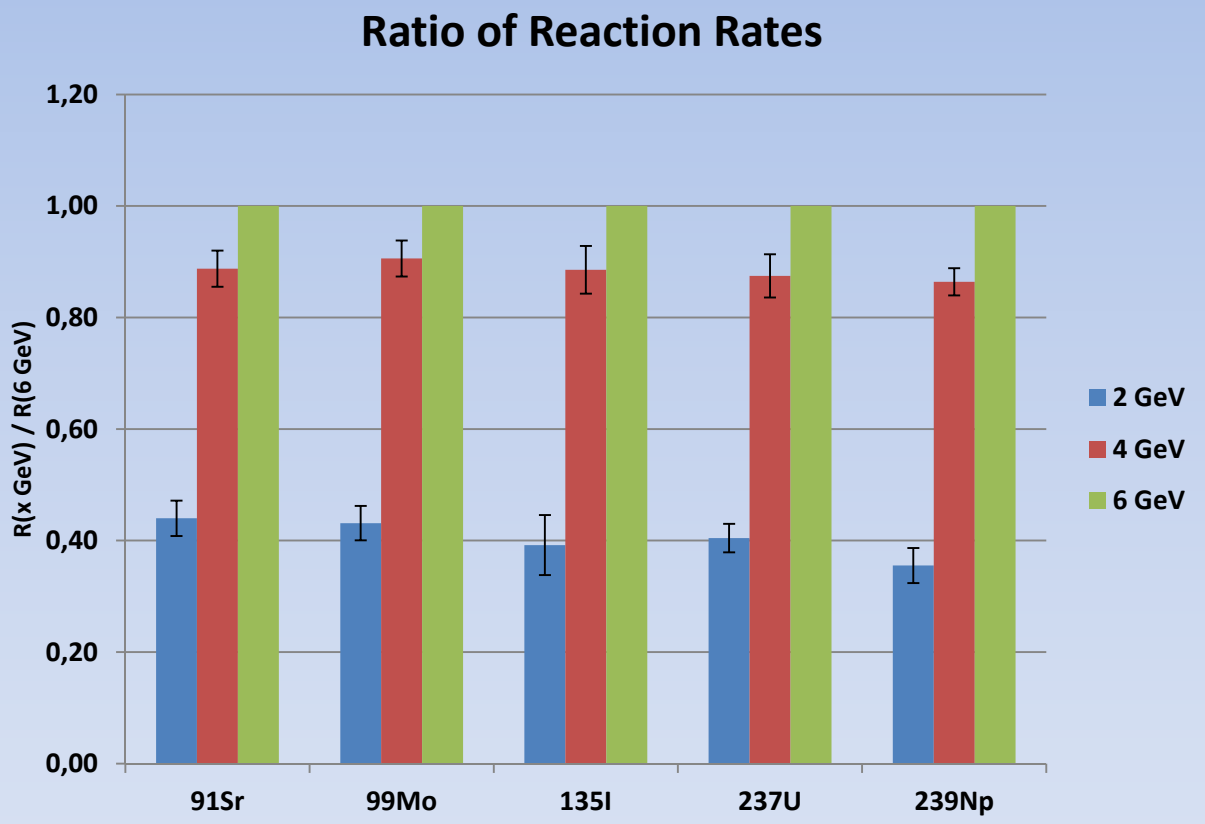
URANIUM INSIDE



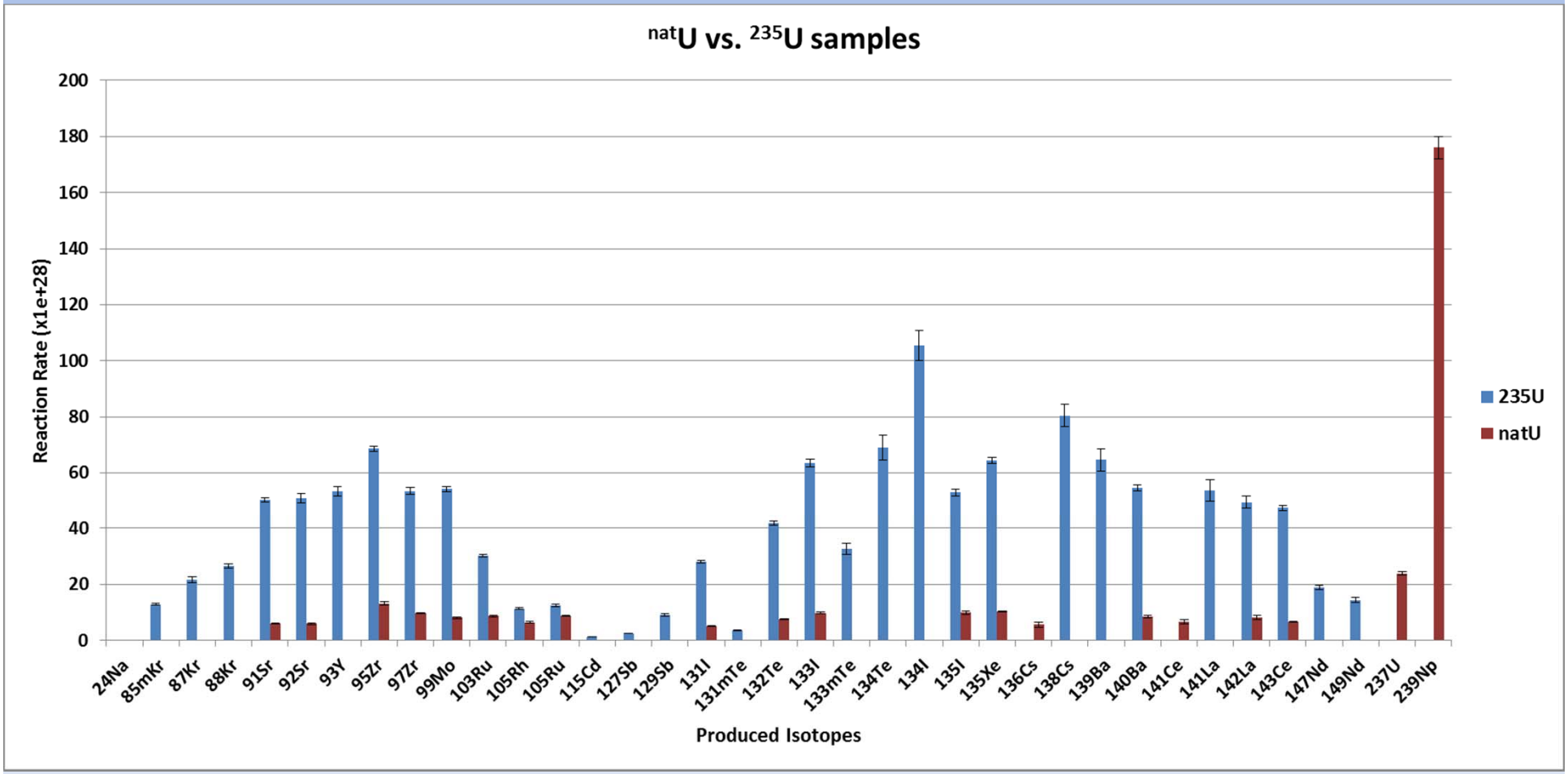
URANIUM INSIDE



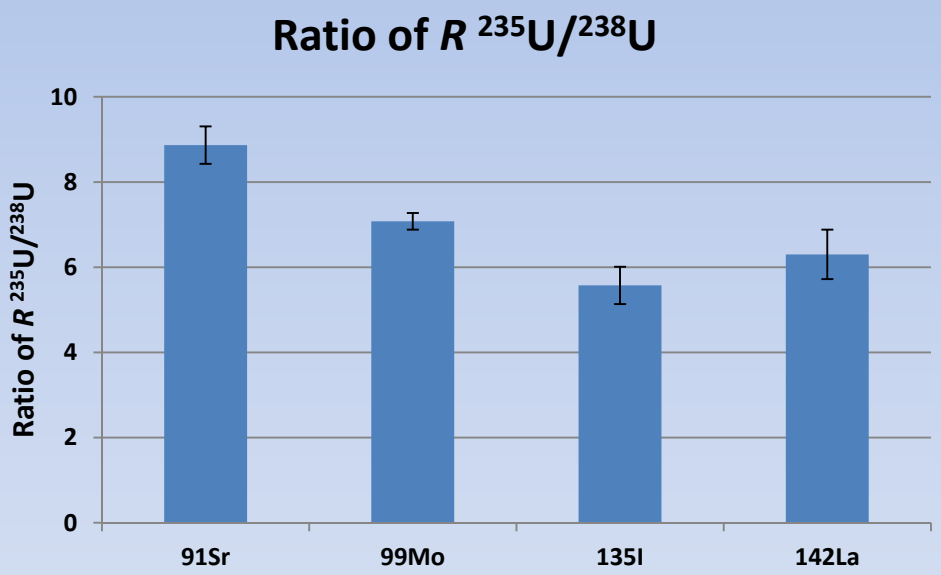
URANIUM INSIDE

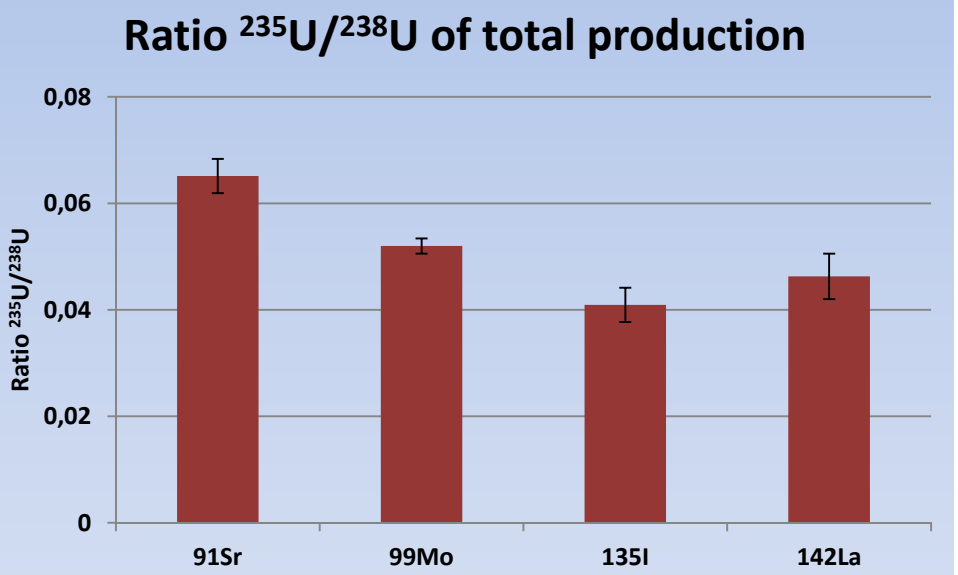


URANIUM ON THE TOP

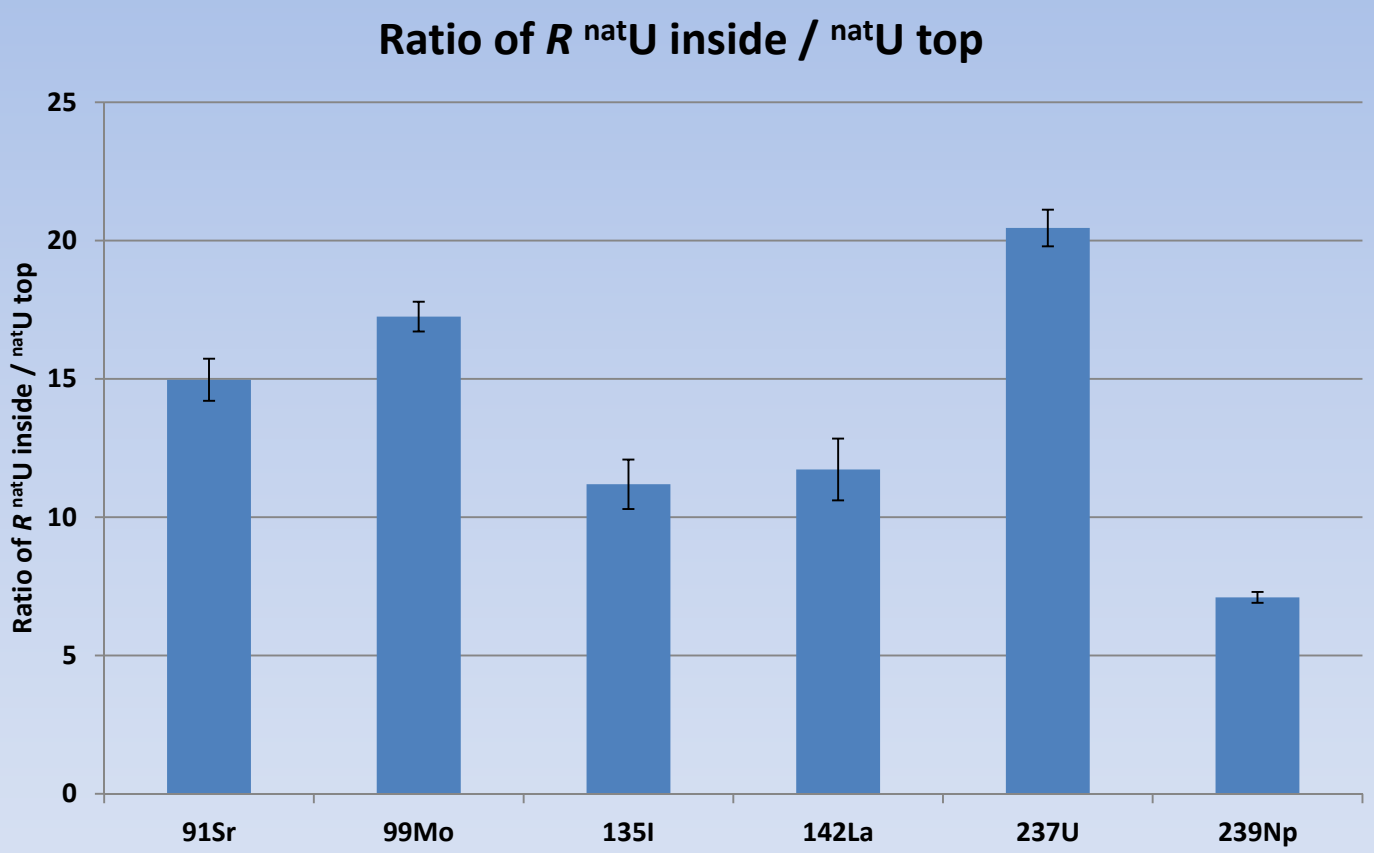


URANIUM ON THE TOP

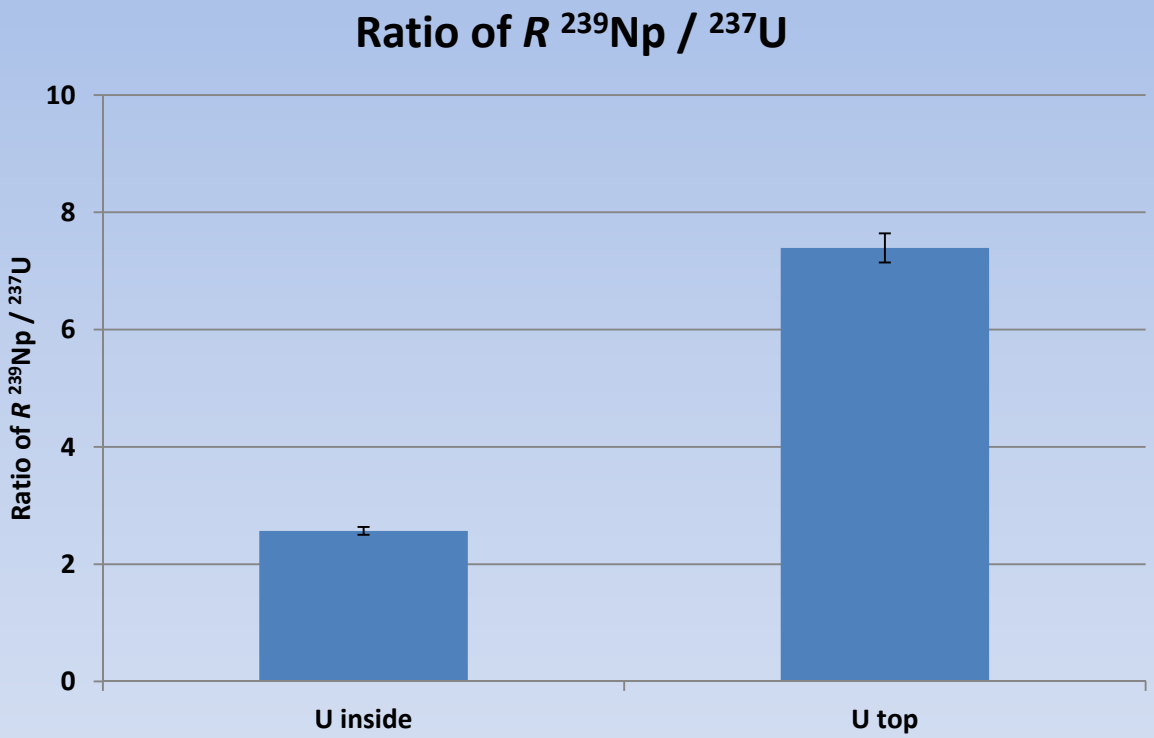




URANIUM RESULTS



URANIUM RESULTS



238U(n,g)239U (23,54 min) β- > **239Np** (2,36 days) β- > 239Pu
238U(n,2n)237U **Ethr = 6,2 MeV**