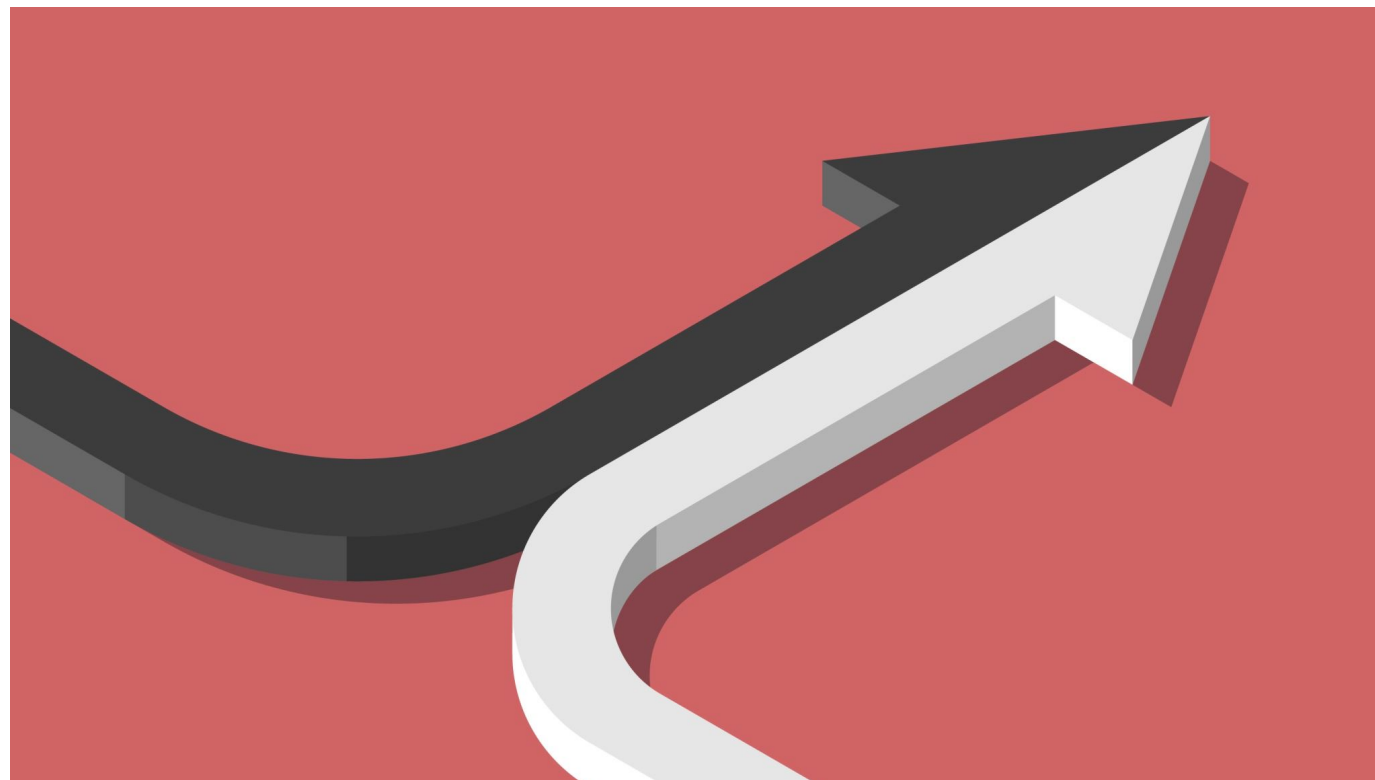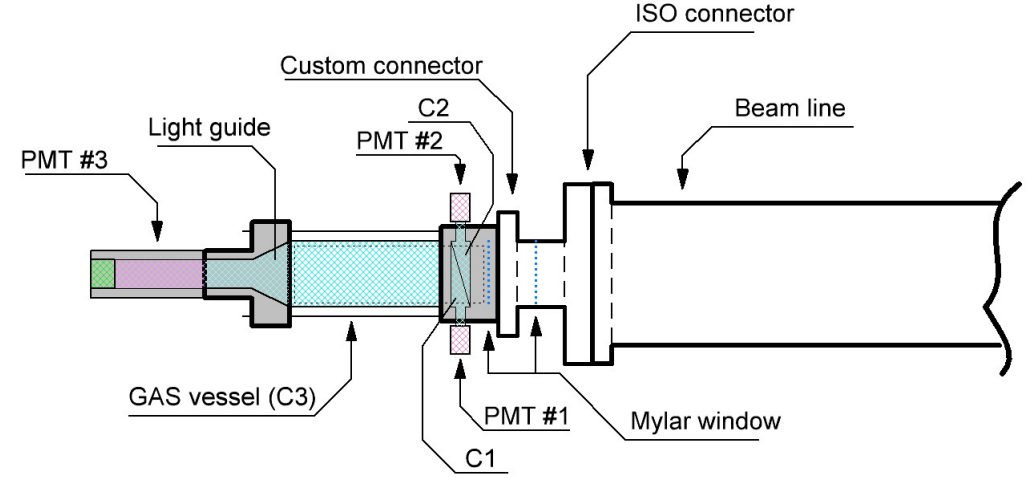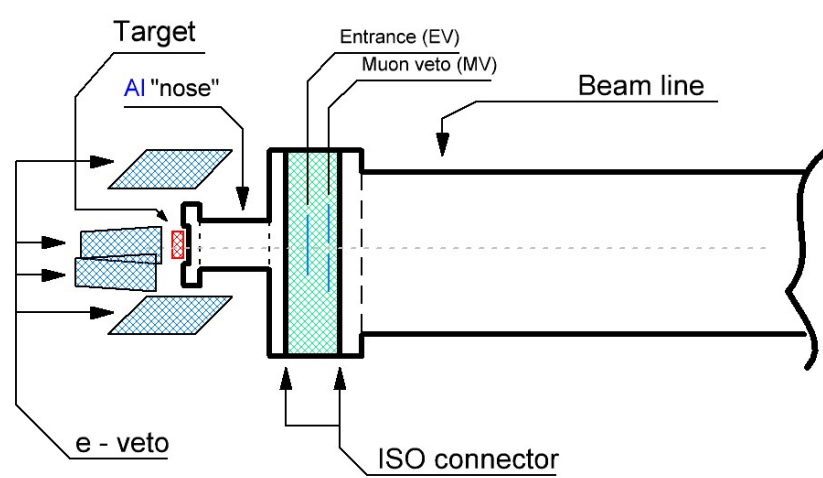# muX analysis meeting

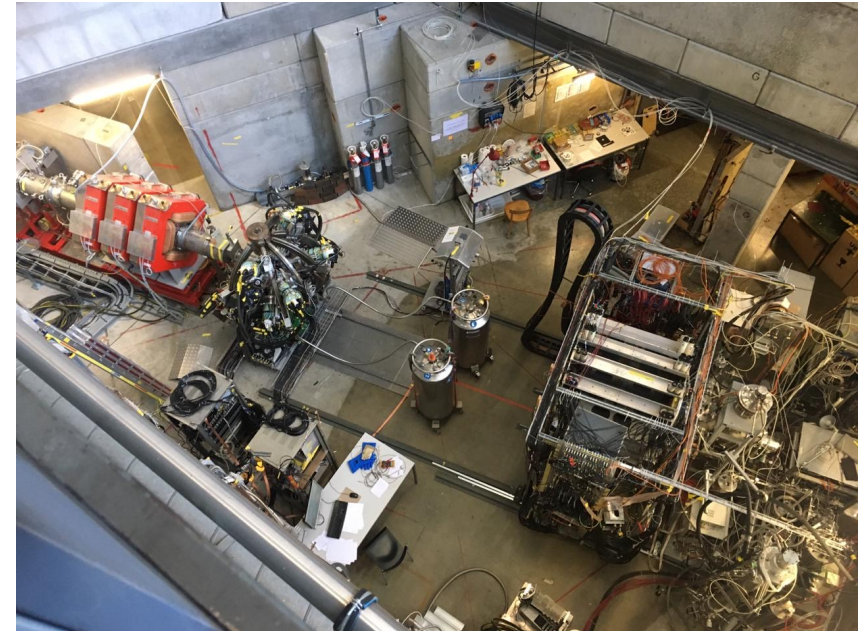## OMC4DBD in 2019

10.06.2020

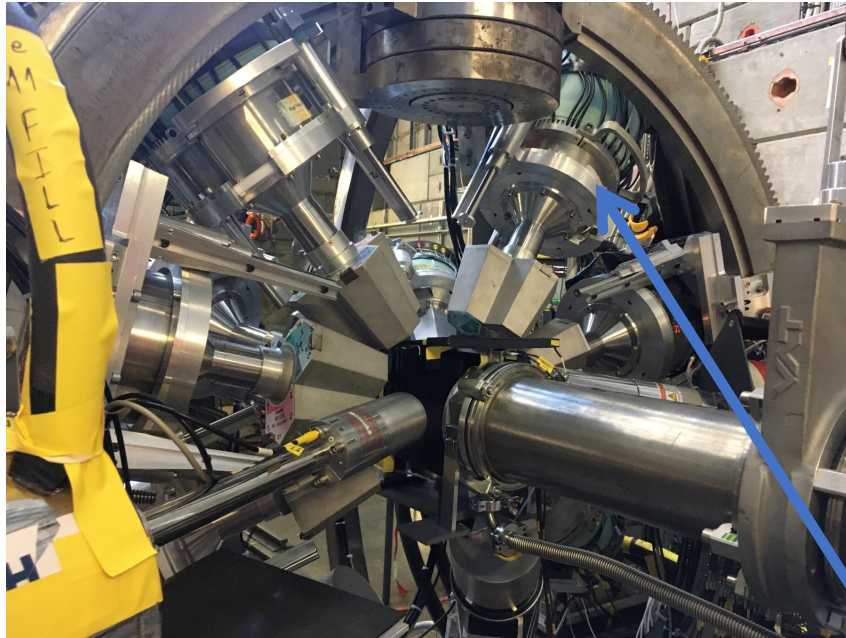Shirchenko M., Shitov Yu., Zinatulina D.

(JINR)

Setup with solid and gas target
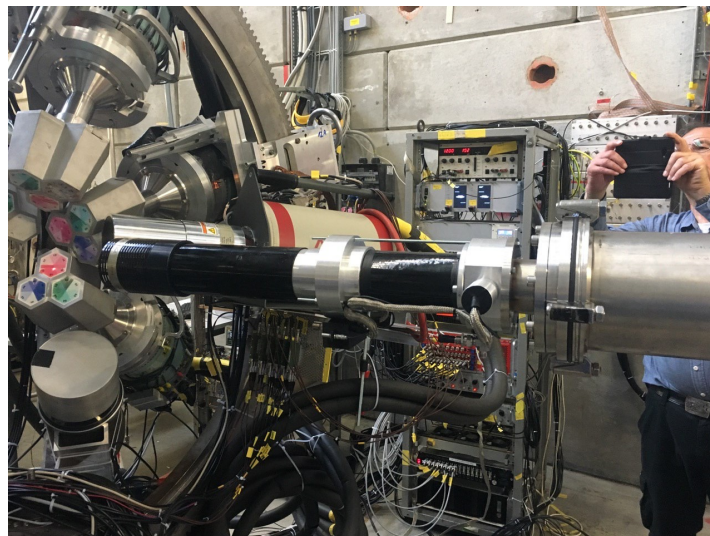
| 0v2β-decay	0v2β-Exper-ts	OMC targets	Quant-ty
^{82}Se	NEMO3, SuperNEMO, CUPID-0	^{82}Kr (99.9%)	1 l (1.7 atm.)
^{130}Te	Cuore 0/Cuore, SNO+	^{130}Xe (99.9%)	1 l (1.7 atm.)
---	Testing shell model for NME	^{24}Mg (99.85%)	2 g

Measurements in 2019

**«Miniball» HPGe detectors array**
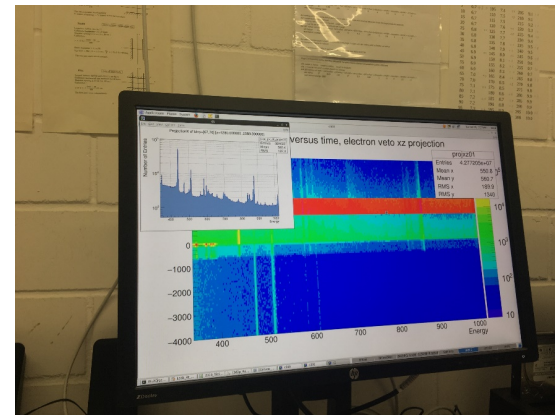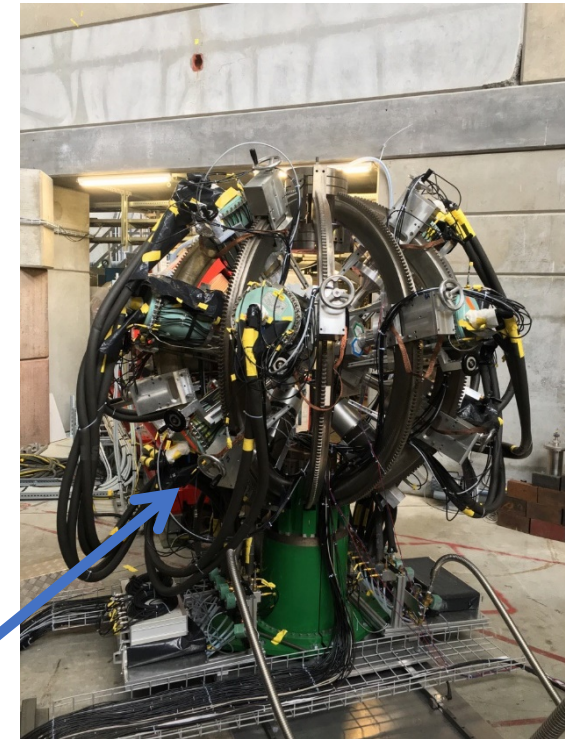
DAQ: 3 digitizers@250 MHz
MIDAS DAQ
MIDAS slow control
Online analysis
Data backup

Preliminary 2019 results: *(E, t)* distribution of the correlated events following μ-capture in ^{24}Mg target
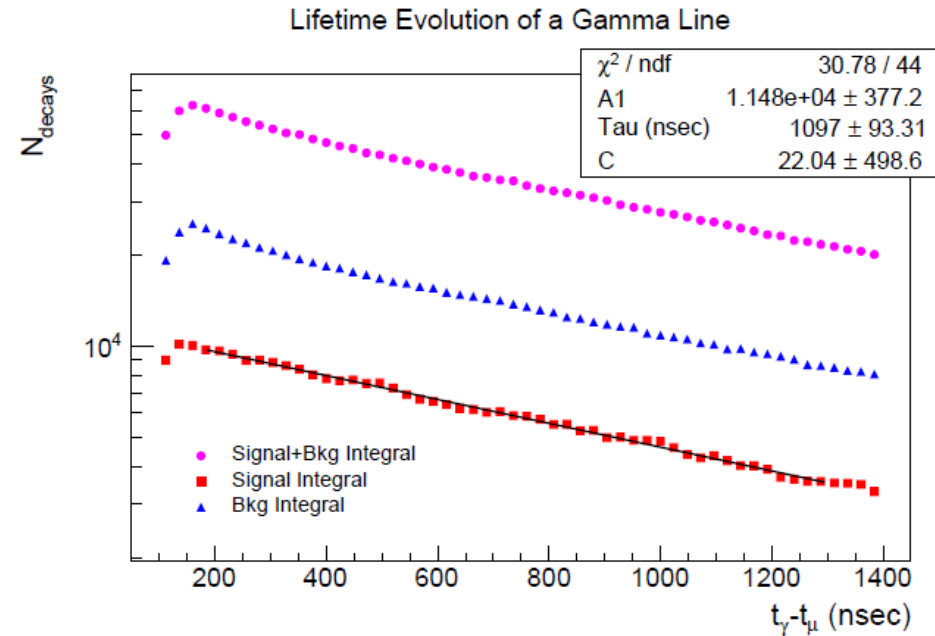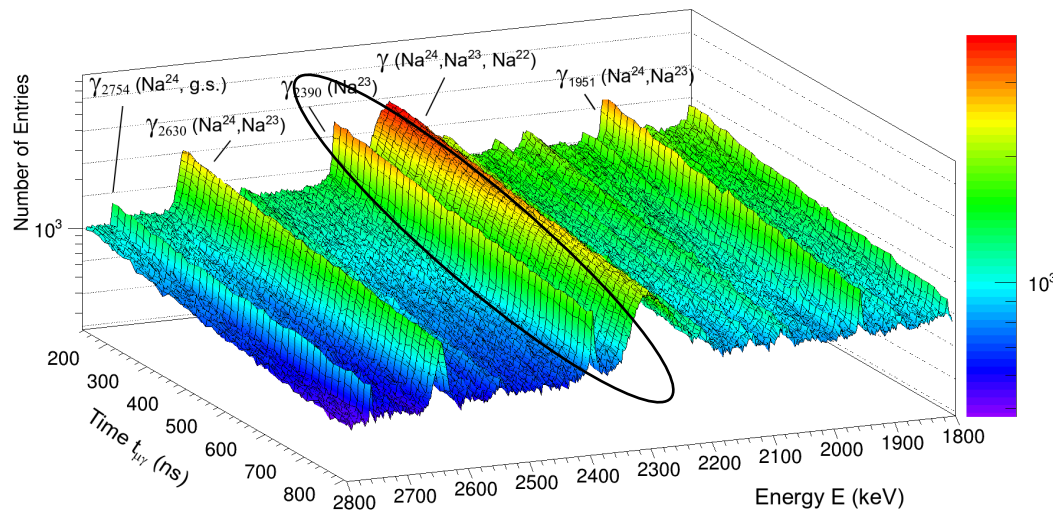

Time evolution of the 2390.6 keV γ-line, following OMC in ^{24}Mg.

Preliminary 2019 results: *(E, t)* distribution of the correlated events following μ-capture in ^{24}Mg target
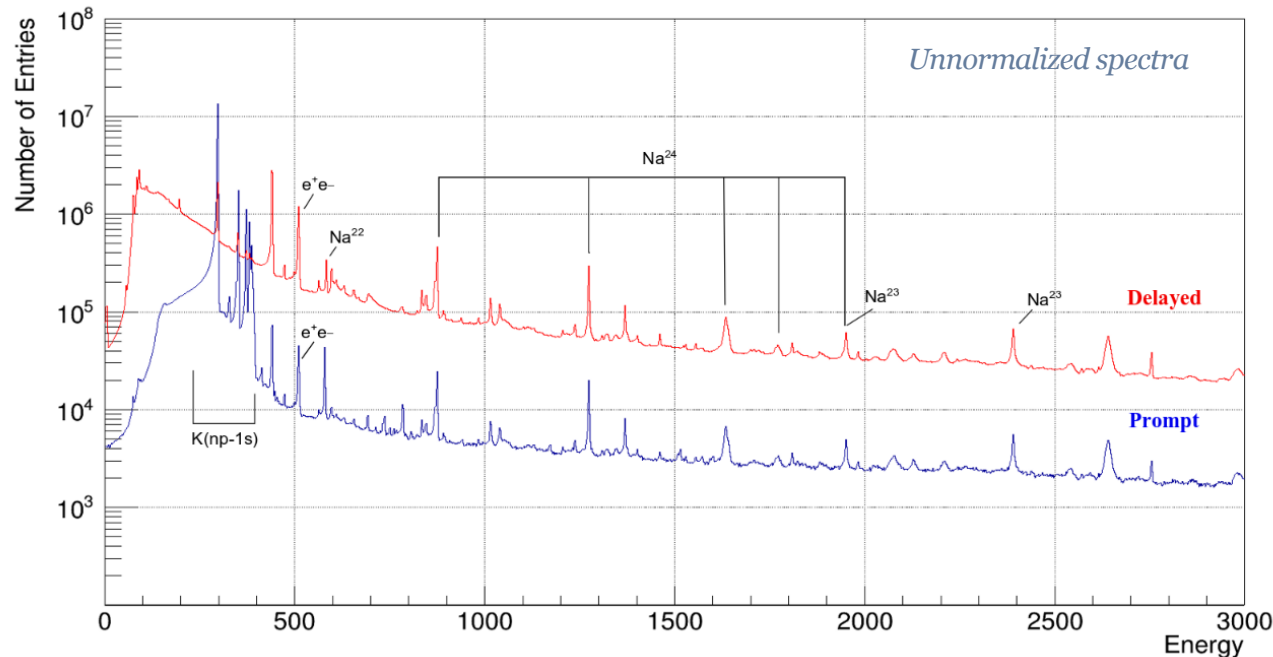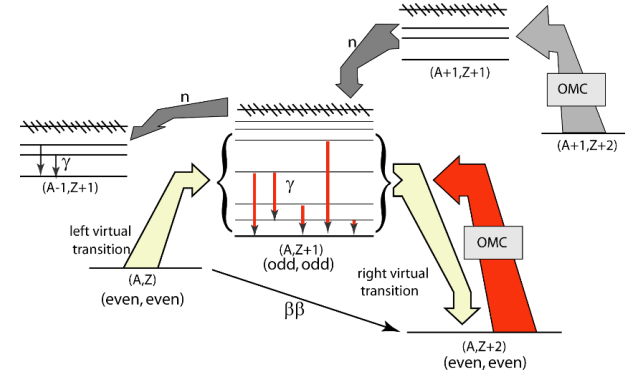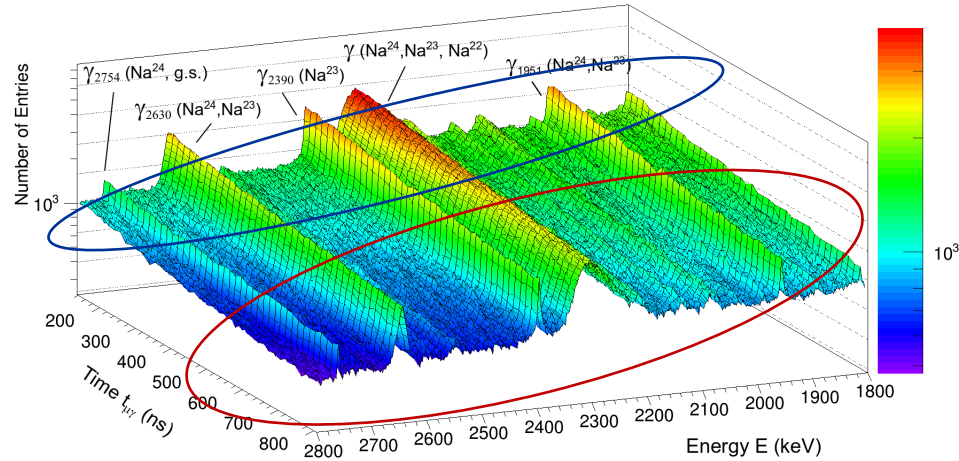
- $t_{\mu\gamma}$ = 0-50 ns: μX-cascades (**Prompt** spectra) – normalization, identification, composition of the surrounded materials and target itself;

- $t_{\mu\gamma}$ = 50-700 ns: γ-radiation following OMC (**Delayed** spectra) – partial μ-capture rates – strength function of the right side;

- T >> $t_{\mu\gamma}$: background radiation (**Uncorrelated** spectra) – calibration of the det-s, identification, yields of short-lived RI during exposure

(E, t) distribution of the correlated events following μ-capture in ⁸²Kr target
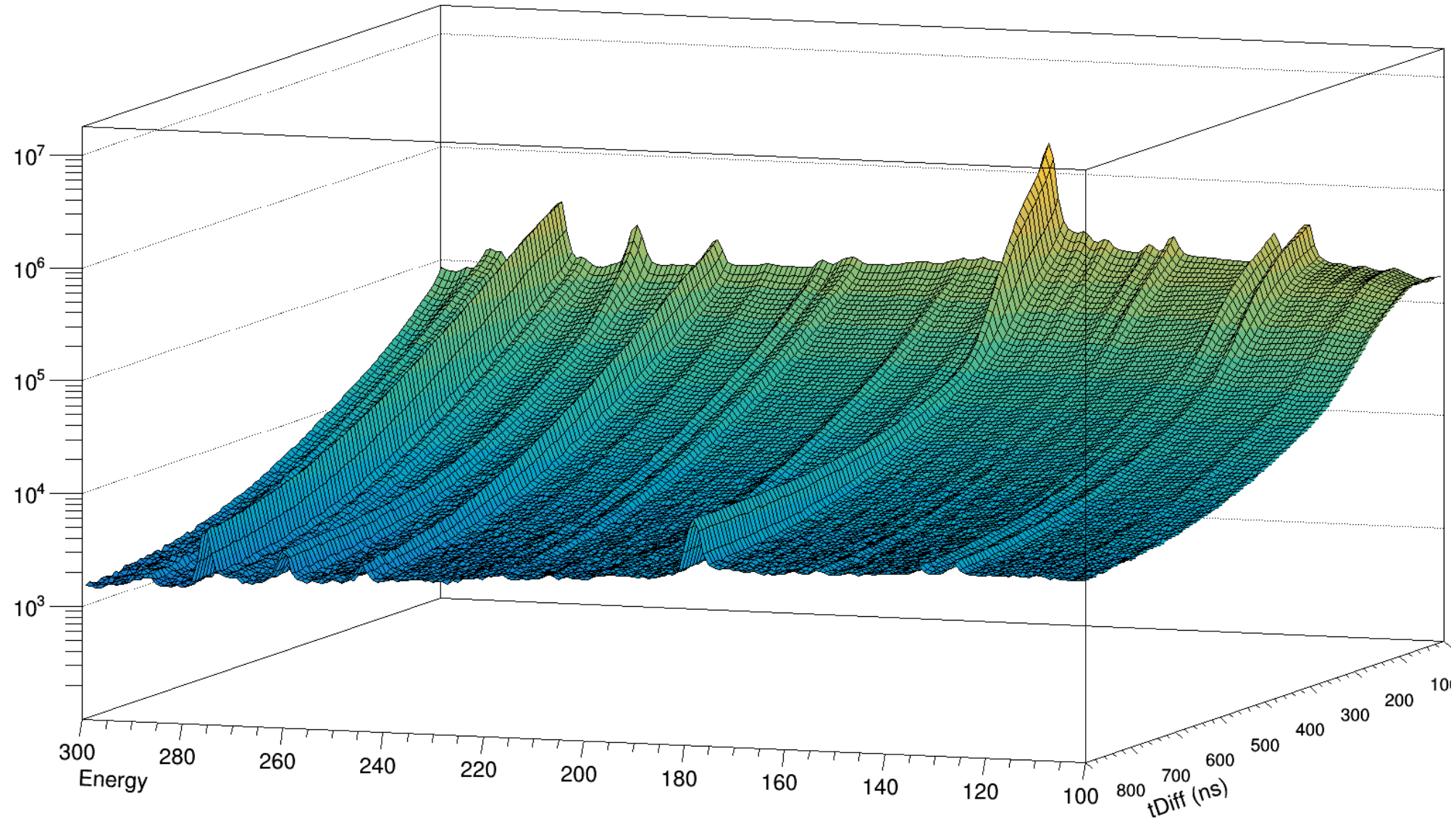
(E, t) distribution of the correlated events following μ-capture in ^{82}Kr target
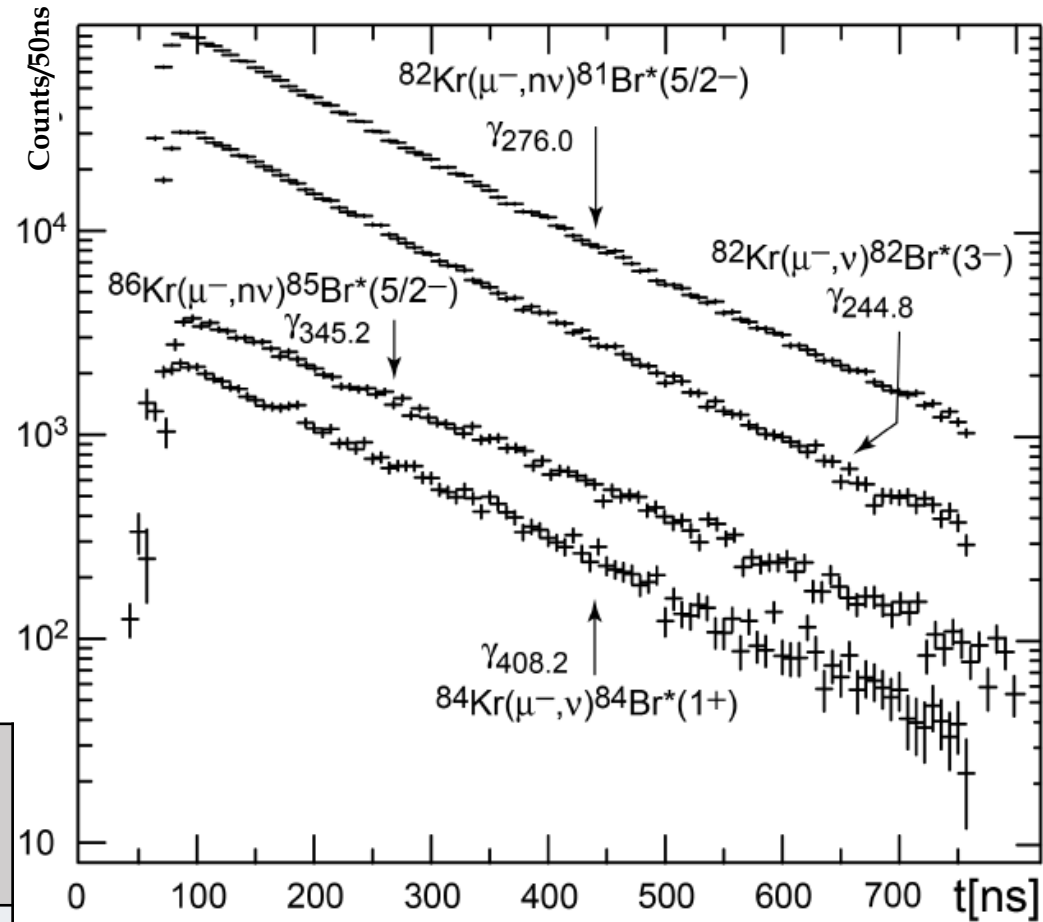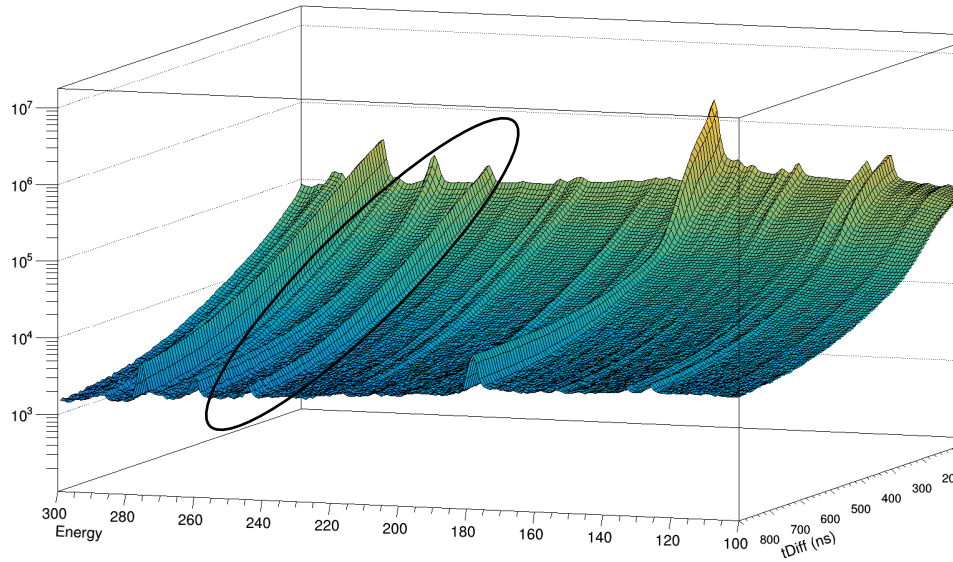
Мишень	Доч. ядро	E_i^γ [кэВ]	τ [нс]	$<\Lambda_{cap}>$ [10^6 с$^{-1}$]
^{82}Kr	^{82}Br	244.8	142.9(6)	
	^{81}Br	276.0	142.6(3)	
			<142.68(37)>	6.576(17)

Временная эволюция γ-линий, сопровождающих ОМЗ в ^{82}Kr (верх) и ^{nat}Kr (низ).

(E, t) distribution of the events following μ-capture in ^{130}Xe target
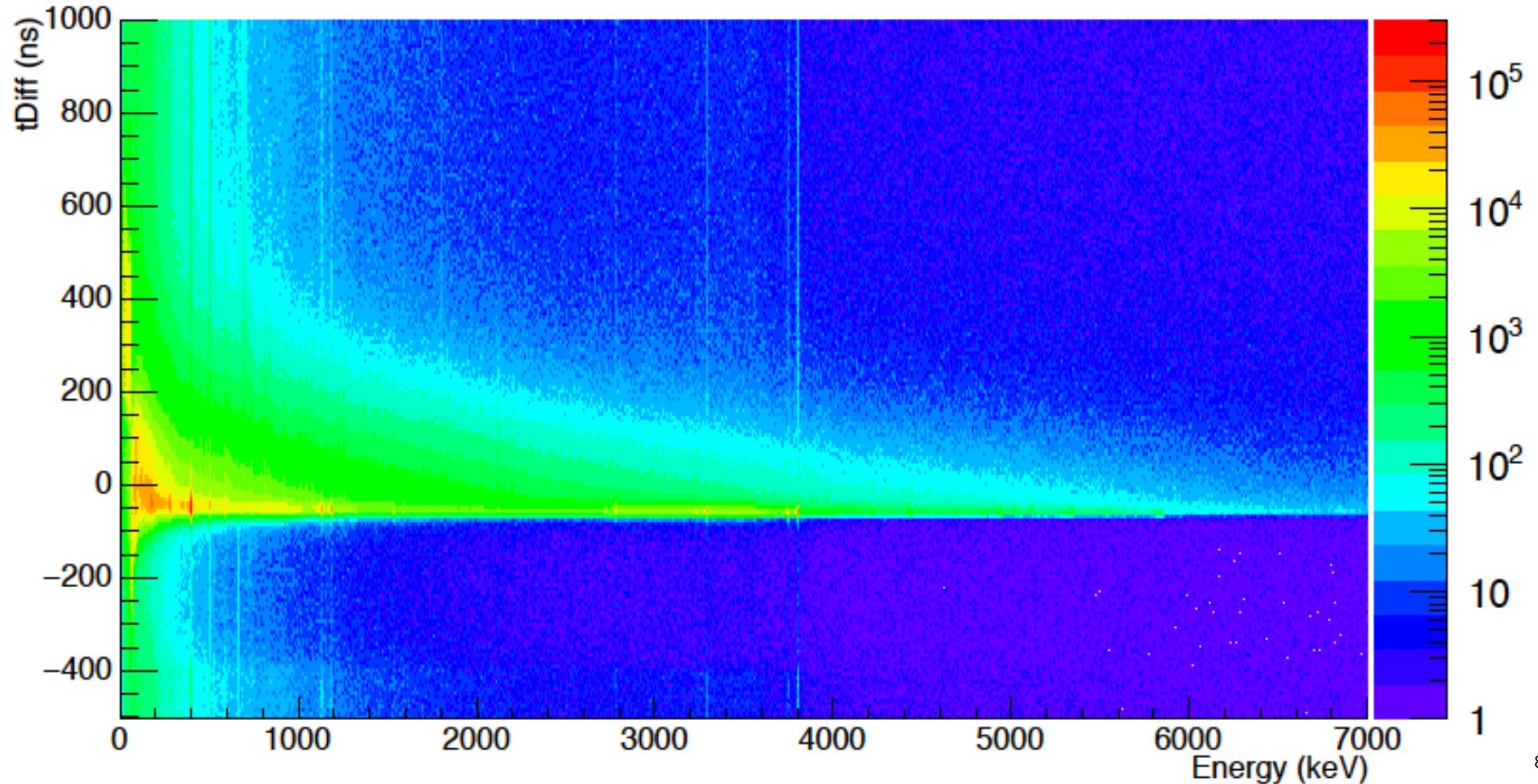
Energy spectra with ^{130}Xe
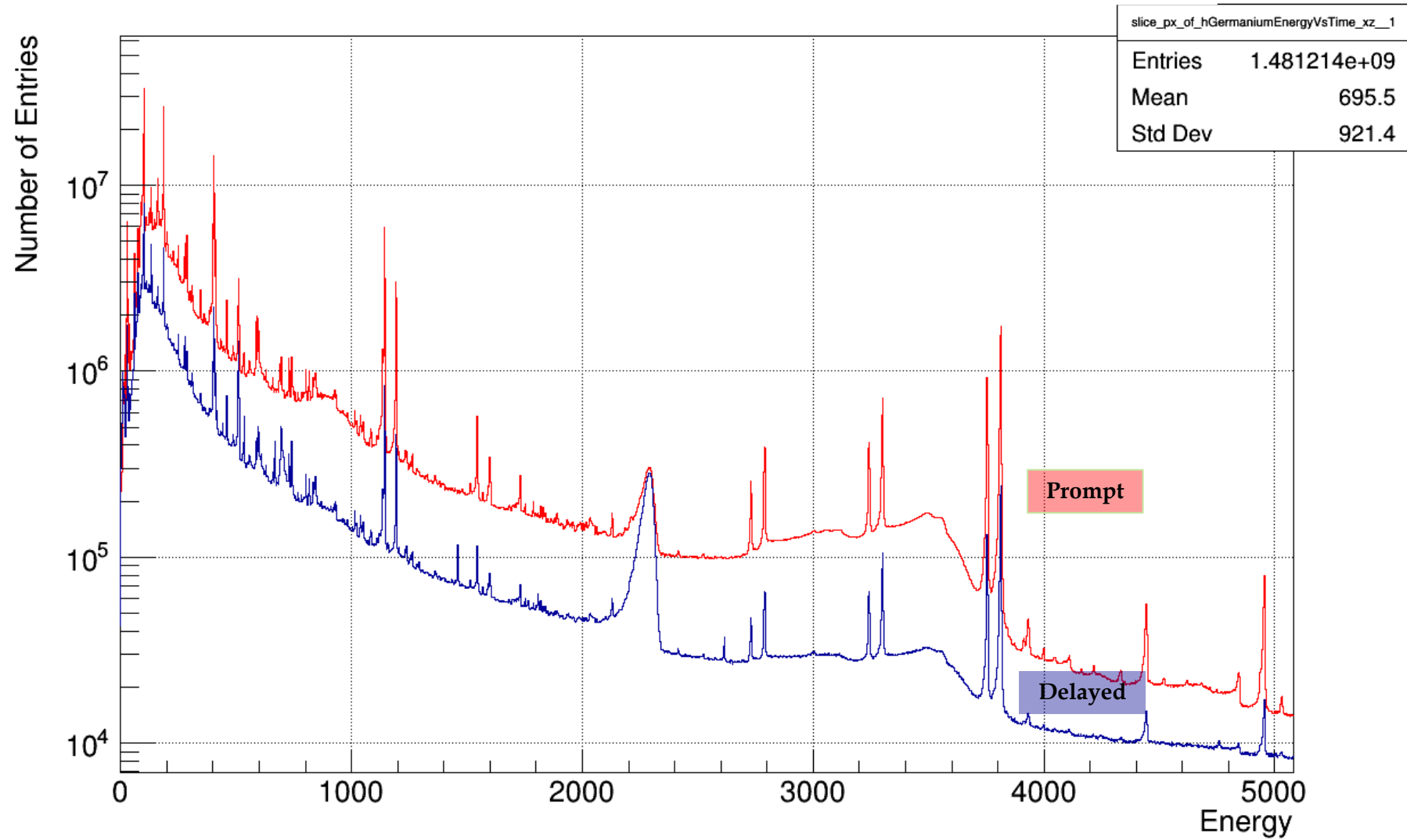
Issues:

- What is the trigger concept? ASCII data file -> binary file –> set of triggers
- How MuonEvent is built from triggers? How t0 is defined?
- Off set parameters in odb for Ge detectors and muon counters;
- Organization of the Pileup in spectra/histos formation;

- Optimization of the Analyser for the Kr and Xe data including the C1, C2 and C3 counters will be needed;

Analysis with efficiency calibration and identification, as well as off-line measurements analysis are going on