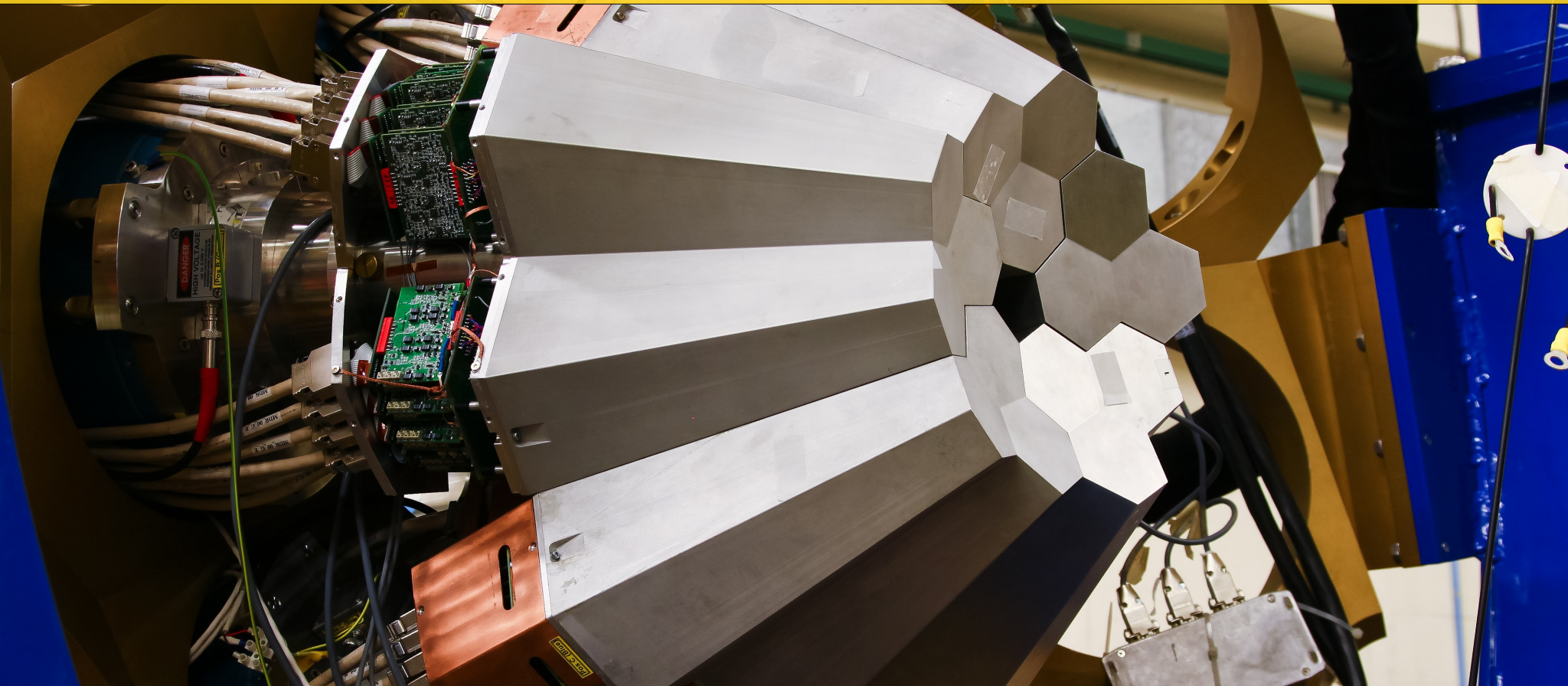
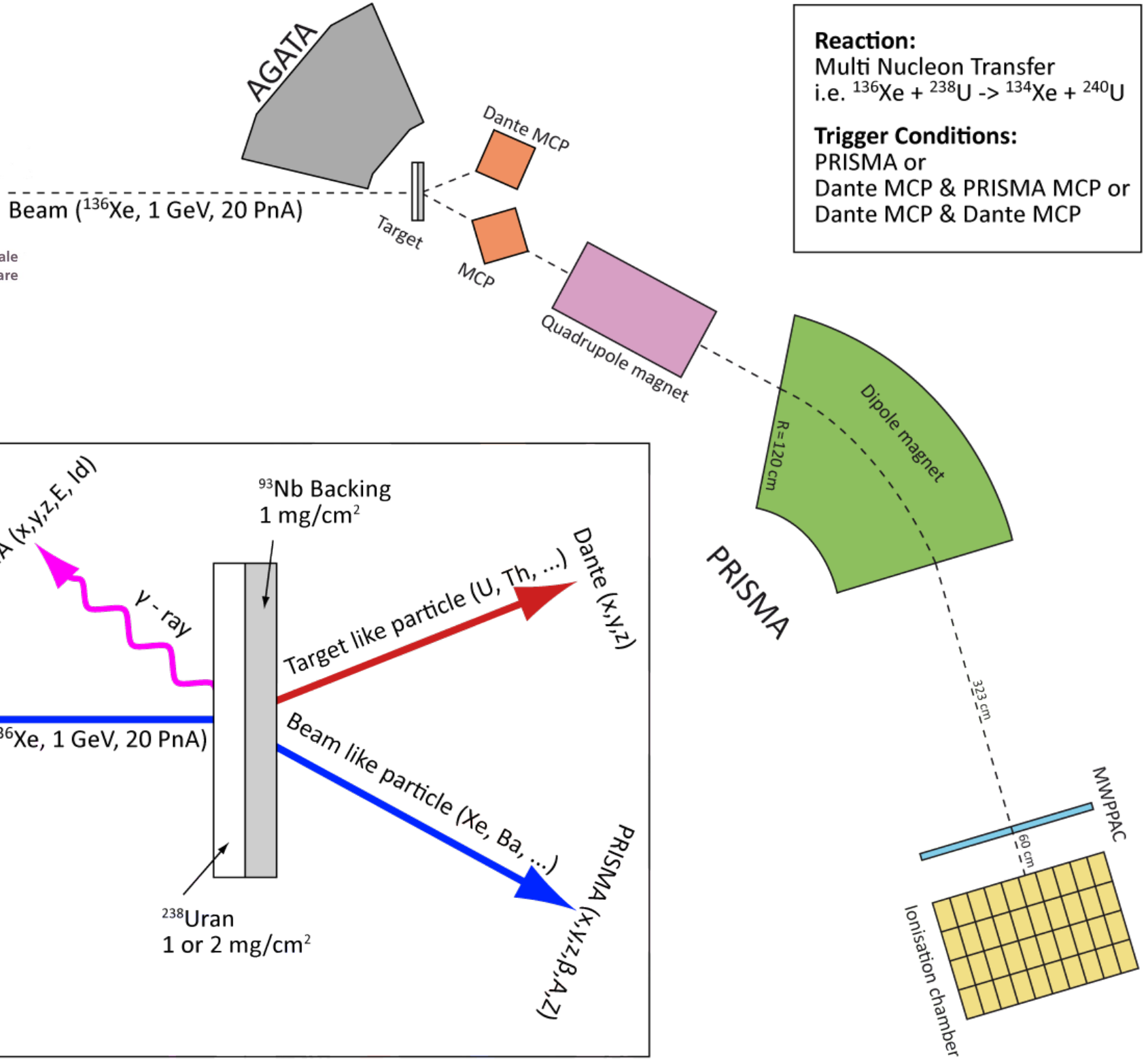


Performance of the AGATA demonstrator Experiment LNL 11.22

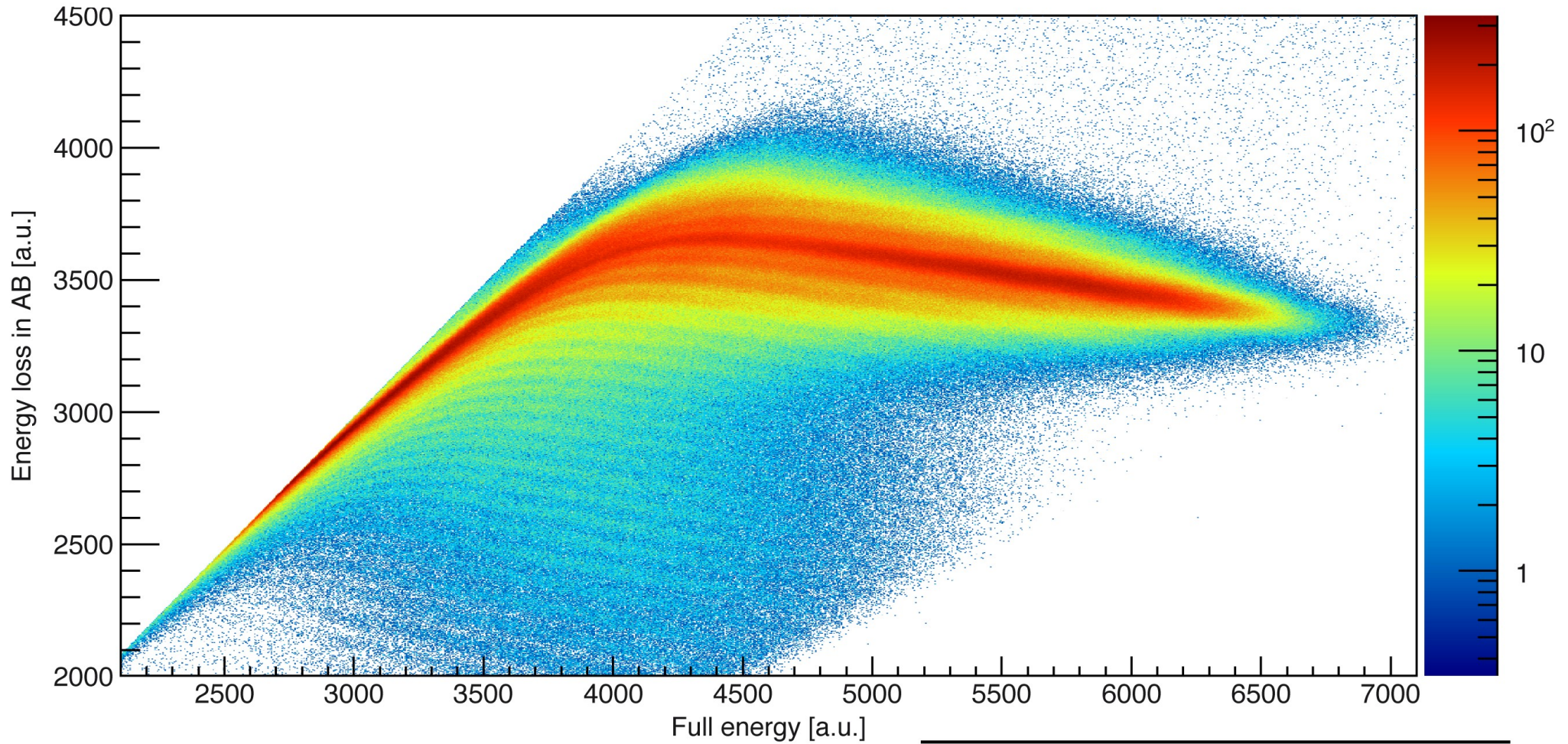


AGATA Week Madrid 2014

Benedikt Birkenbach, Kerstin Geibel, Herbert Hess, Fabian Radeck, Peter Reiter, Tim Steinbach, Andreas Vogt, Andreas Wiens : IKP, Universität zu Köln, Germany | Dino Bazzacco, Enrico Farnea, Silvia Lenzi, Caterina Michelagnoli, Daniele Montanari, Francesco Recchia, Calin Ur : Dipartimento di Fisica dell'Università and INFN, Italy | Andrea Gottardo, Daniel Napoli, Eda Sahin, Jose Javier Valiente Dobon : INFN - Laboratori Nazionali di Legnaro, Italy | Angela Bracco, Fabio Crespi, Agnese Giaz, Silvia Leoni, Luna Pellegrini, Valeria Vandone : INFN and Università di Milano, Italy | Bart Bruyneel : CEA Saclay, France | Aila Gengelbach, Paer-Anders Soederstroem : Department of Physics and Astronomy, University of Uppsala, Sweden | Michael Bowry : Department of Physics, University of Surrey | Bartłomiej Szpak : Institute of Nuclear Physics, Polish Academy of Sciences, Poland | Suzana Szilner : Ruder Boskovic Institute Zagreb, Croatia



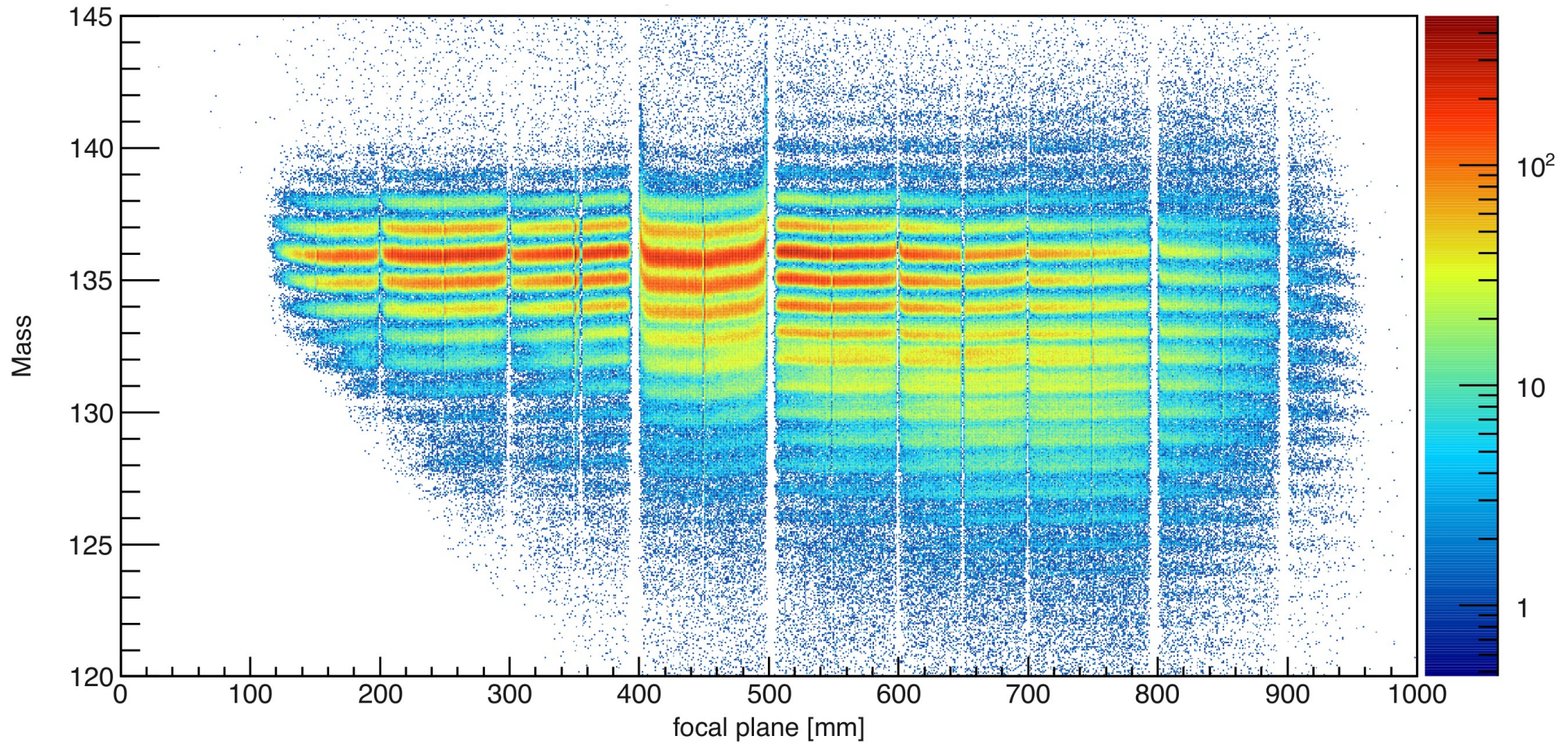
Z Identification in PRISMA



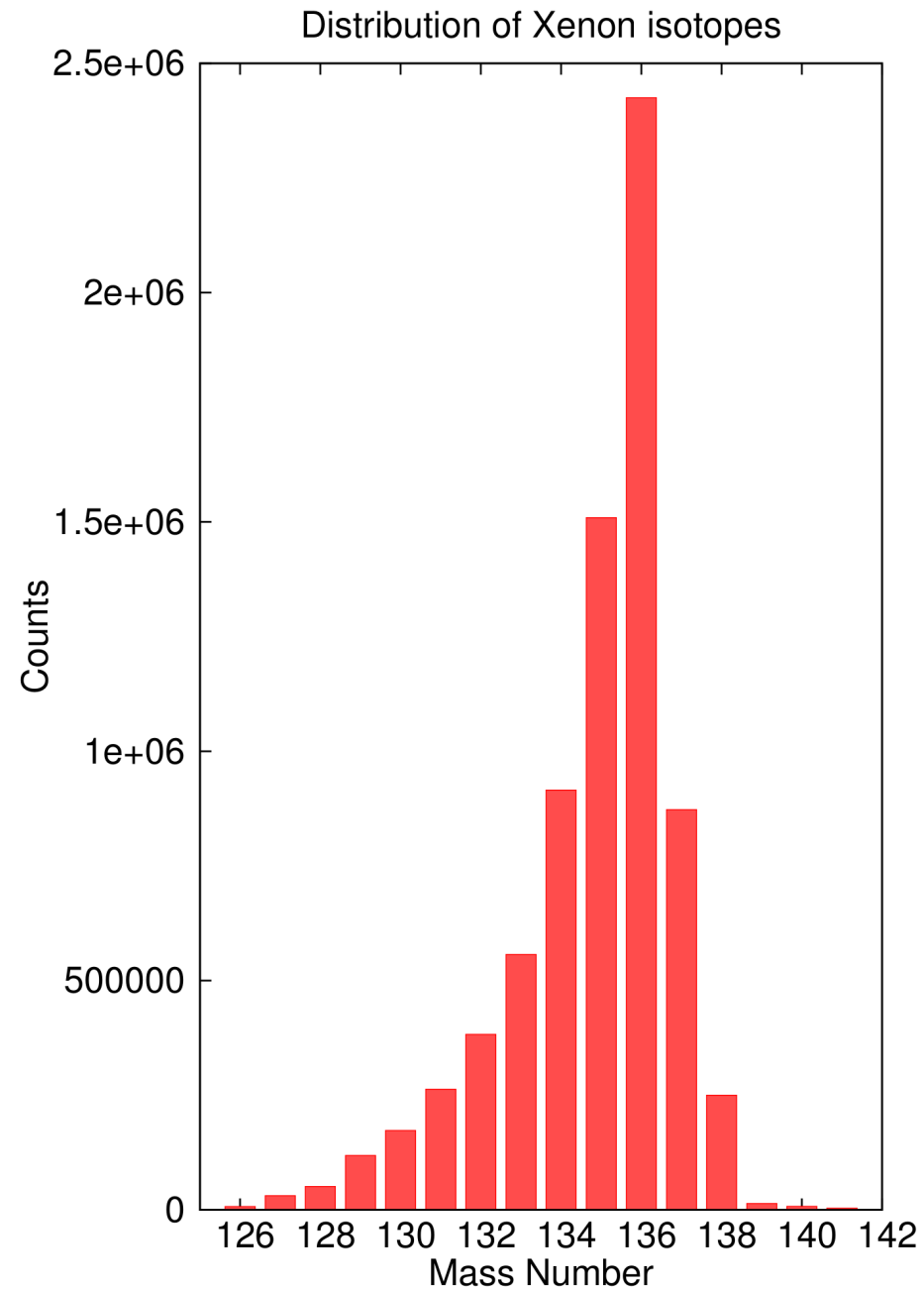
$$-\frac{dE}{dx} \propto \frac{Z^2}{E}$$

Barium	1.79×10^6	16.0%
Caesium	3.71×10^6	33.2%
Xenon	11.17×10^6	100%
Iodine	4.10×10^6	36.7%
Tellurium	2.07×10^6	18.5%

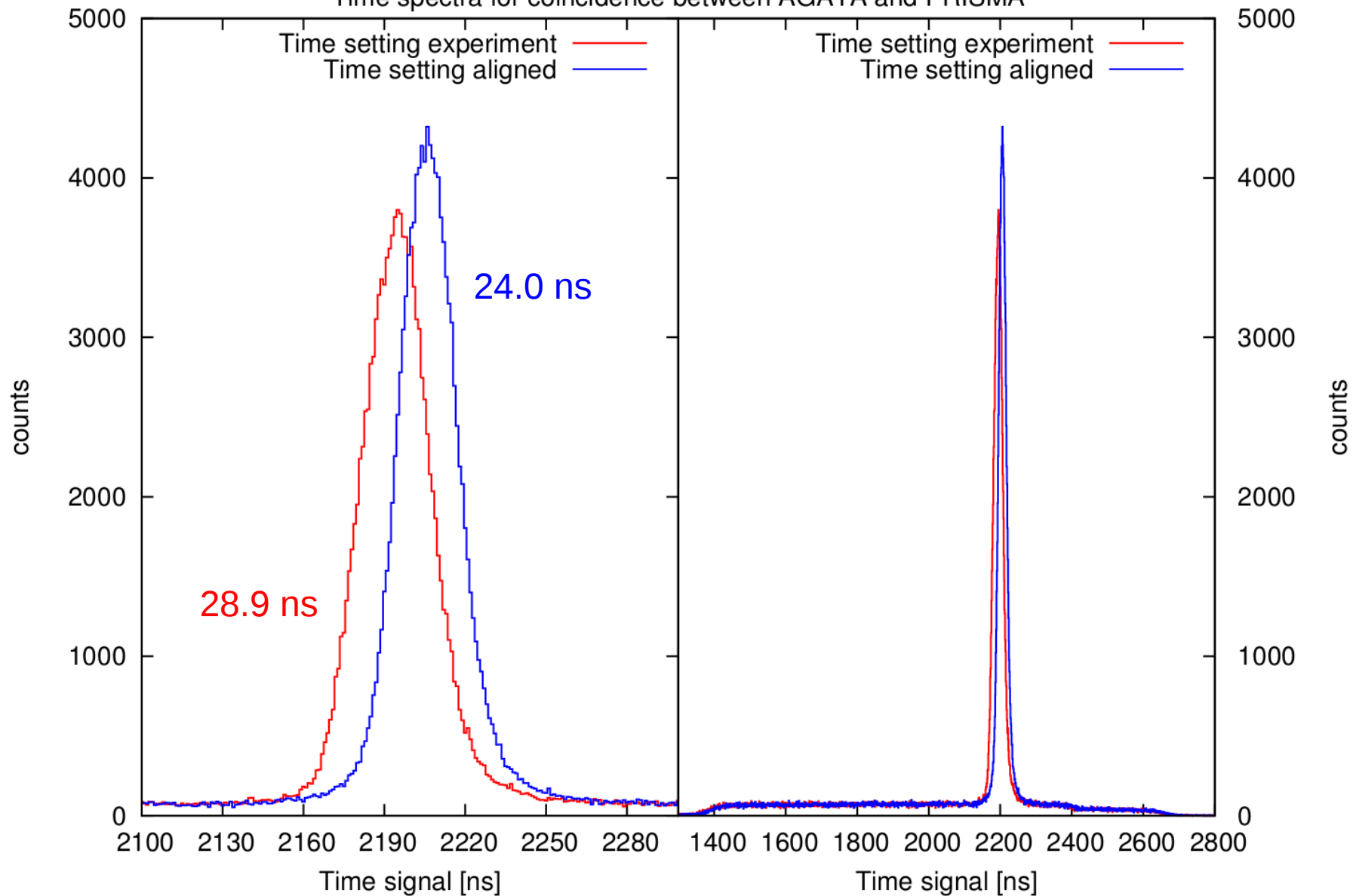
Mass spectra for Xenon (2/5 of total statistic)



Xe isotope	Counts	Proportion
126	7300	0.3
127	30833	1.3
128	50935	2.1
129	118278	4.9
130	173048	7.1
131	263162	10.9
132	382781	15.8
133	556940	23.0
134	915442	37.7
135	1509140	62.2
136	2425030	100.0
137	872634	36.0
138	250071	10.3
139	13973	0.6
140	7536	0.3
141	3689	0.2



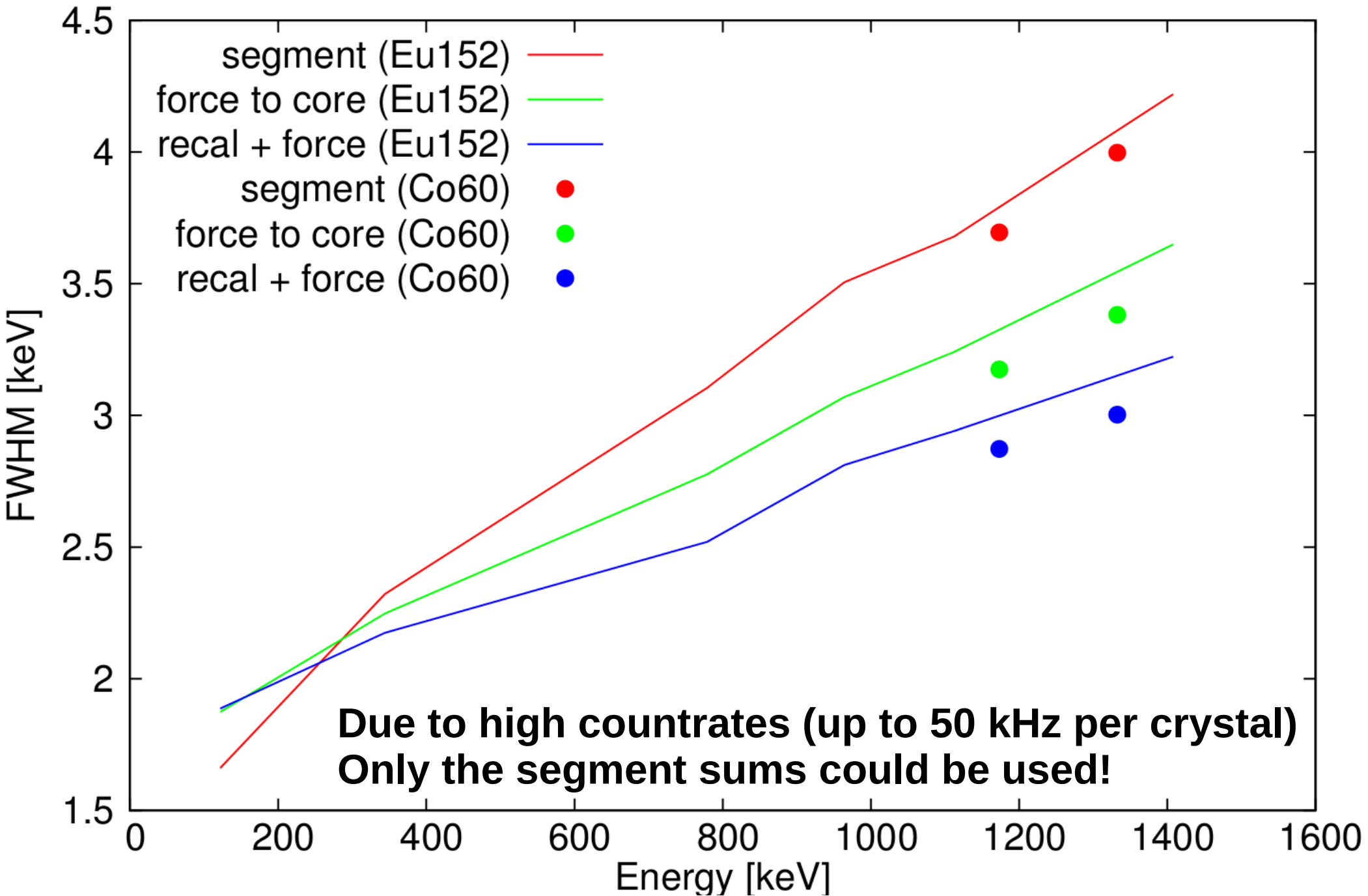
Time spectra for coincidence between AGATA and PRISMA



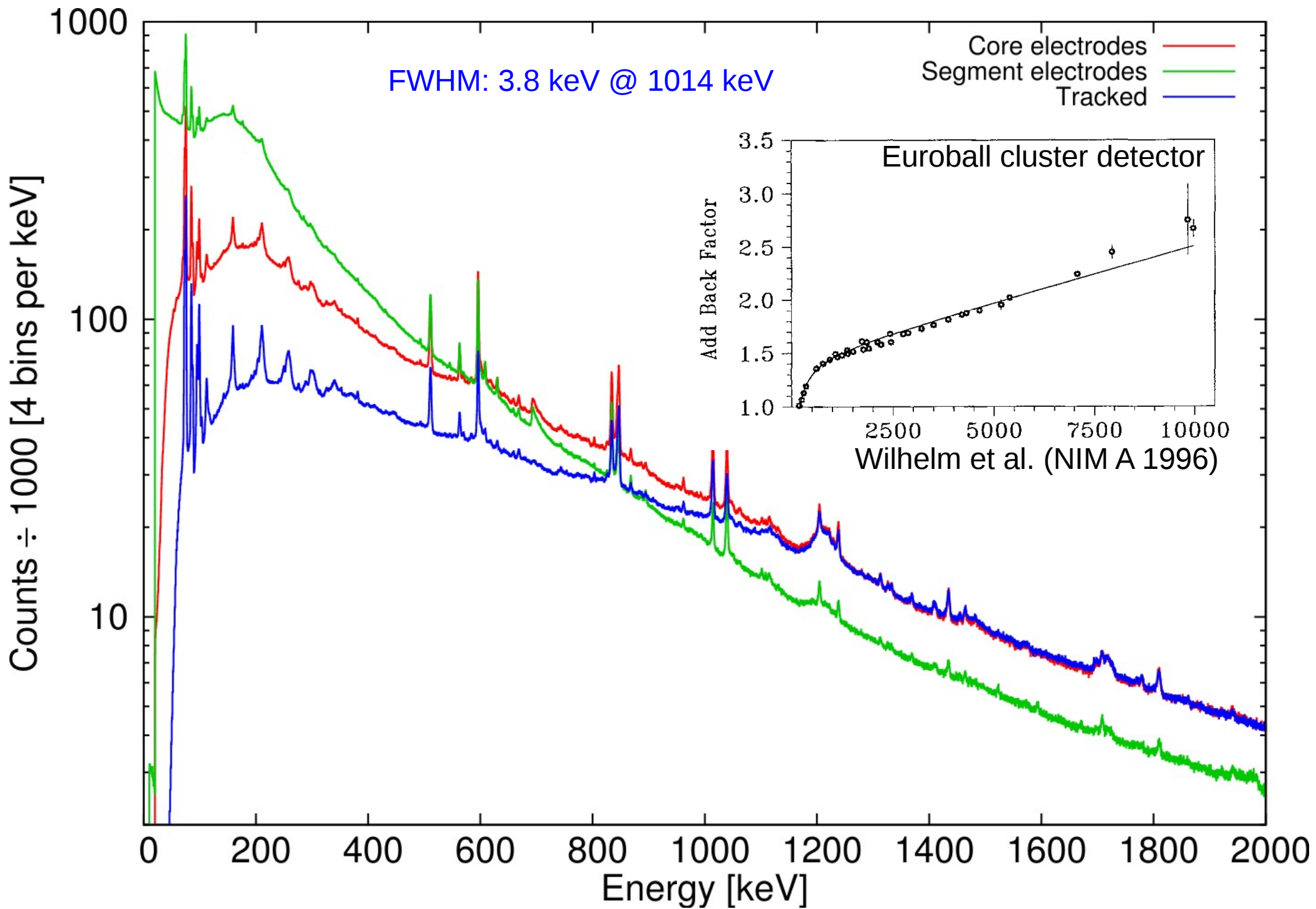
Time alignment of AGATA: 1) segment to core
 2) core to PSA
 3) core to core
Time signal = $\text{gammaT} + \text{TOF}$

Best time resolution with
identified particles in prisma:
FWHM: 15.7 ns

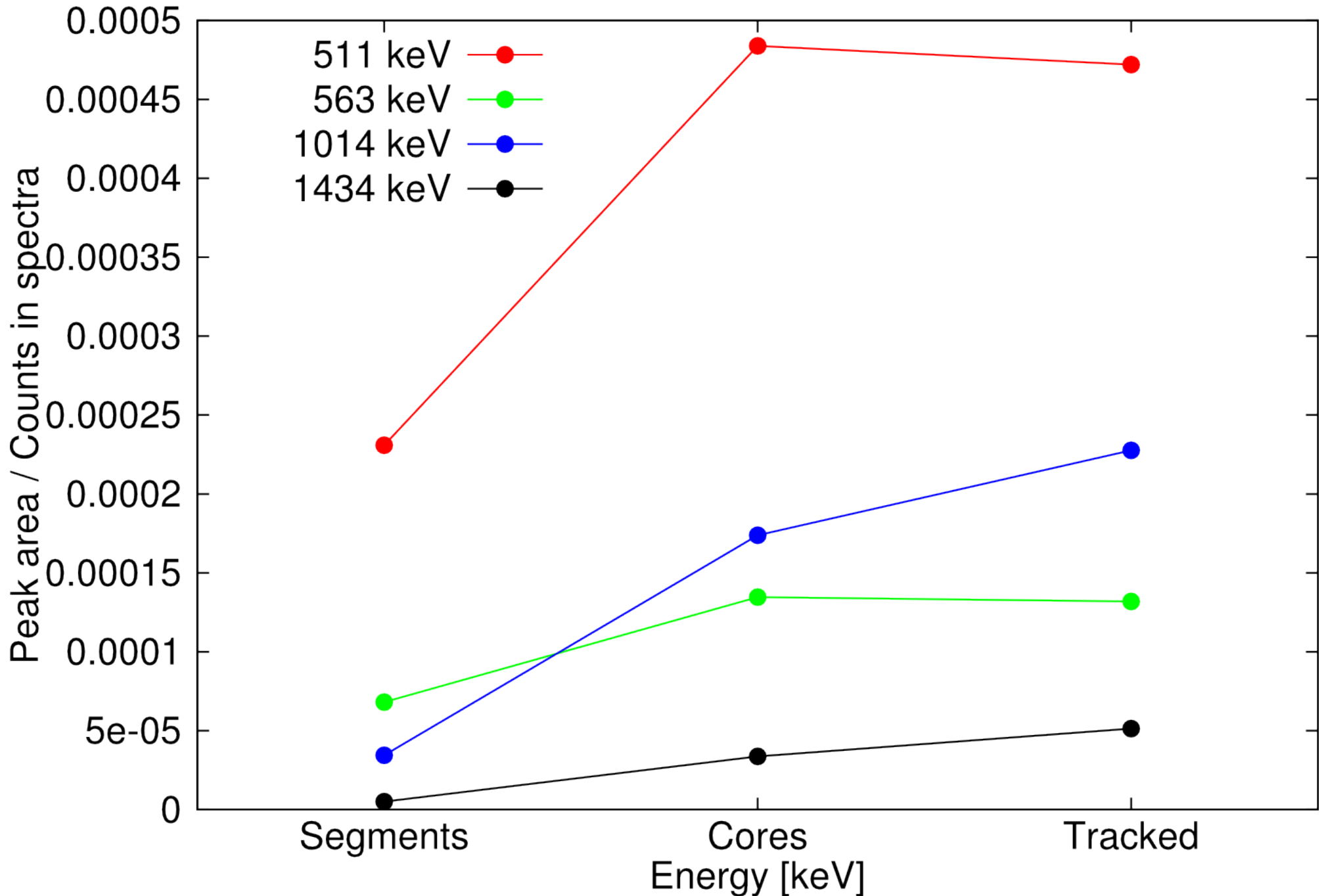
FWHM of source runs Calibration Run



Gamma ray spectra of the complete experiment



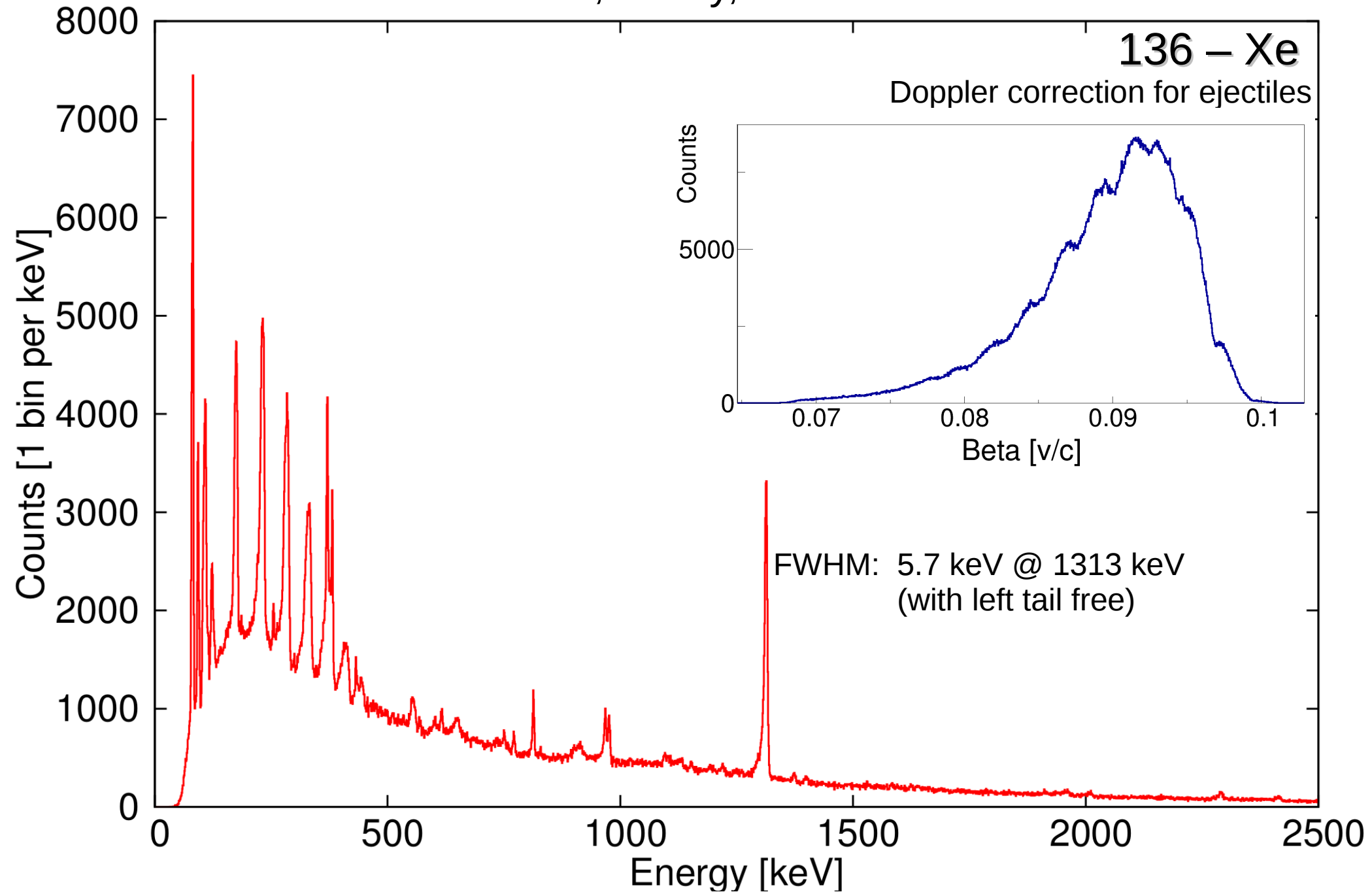
Peak to total

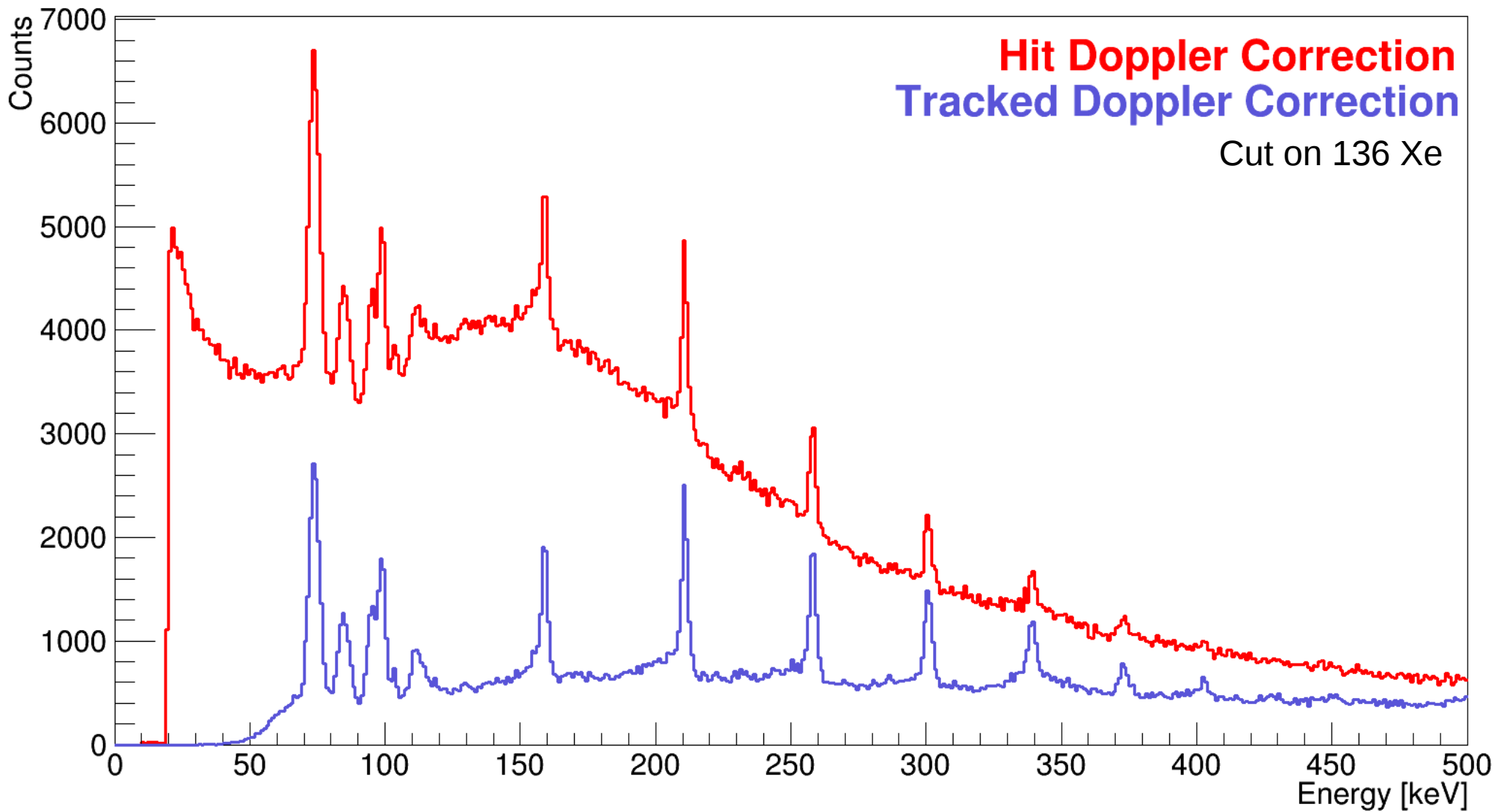


Tracking efficiency of 87 % at 1.4 MeV

Reported Tracking efficiency 84.5 % at 1.33 MeV (AGATA, NIM A 2012)

Optimization of Doppler correction: Variation of MCPx, MCPy, AGATA z and Beta





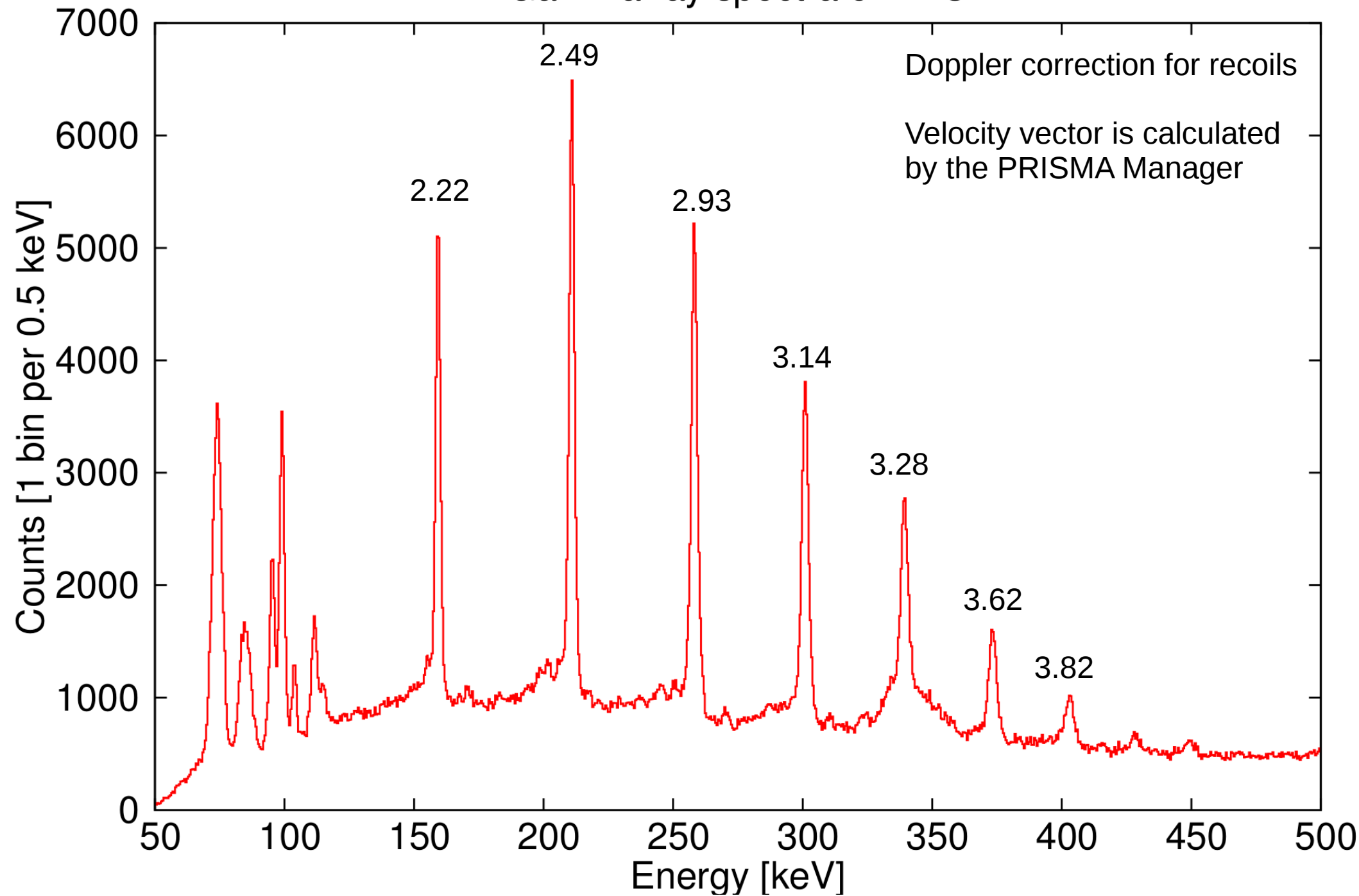
Hit Doppler correction:

Doppler correction for every hit identified in the PSA

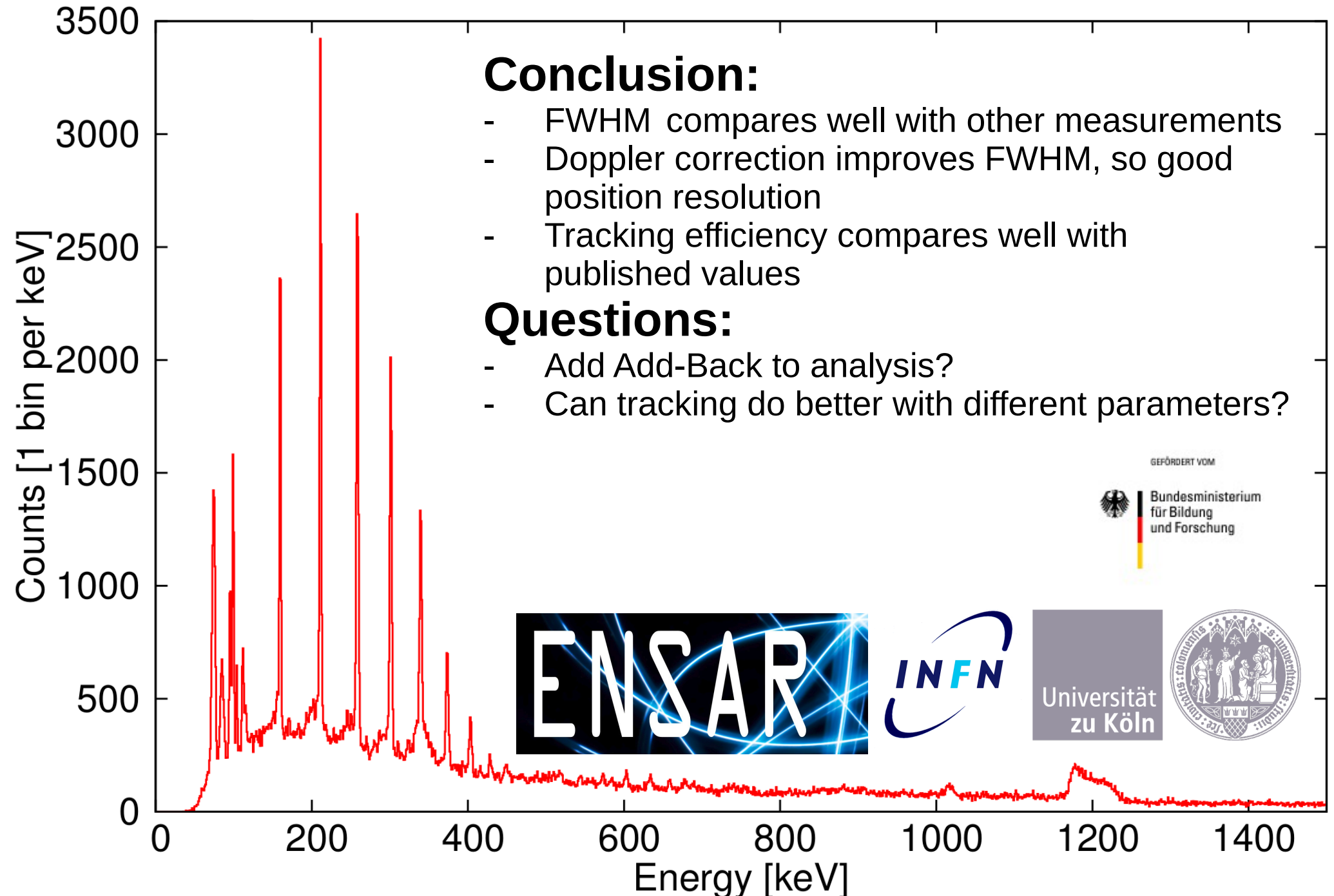
Tracked Doppler correction:

Doppler correction after tracking (including 1st Interaction)

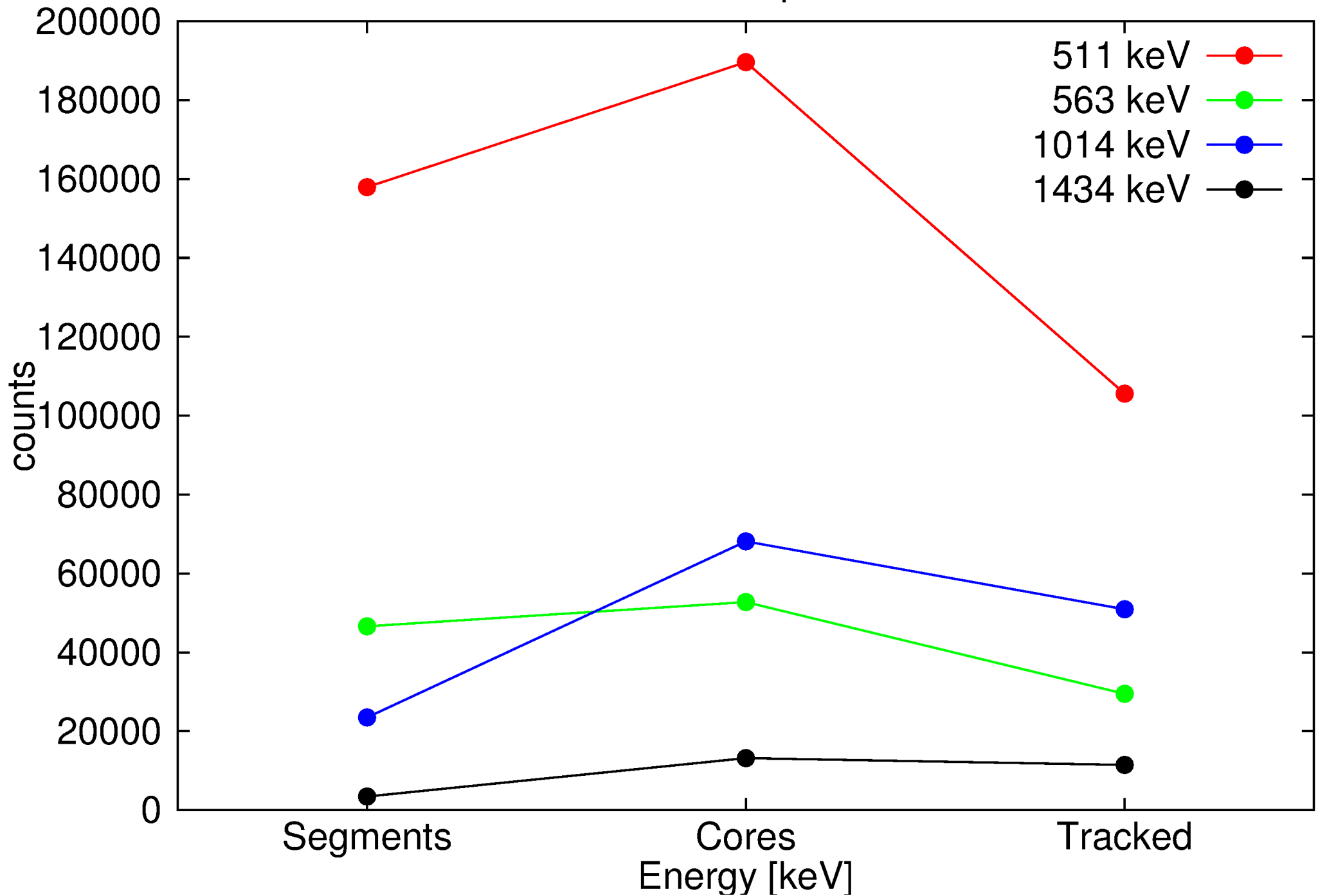
Gamma ray spectra of ^{238}U



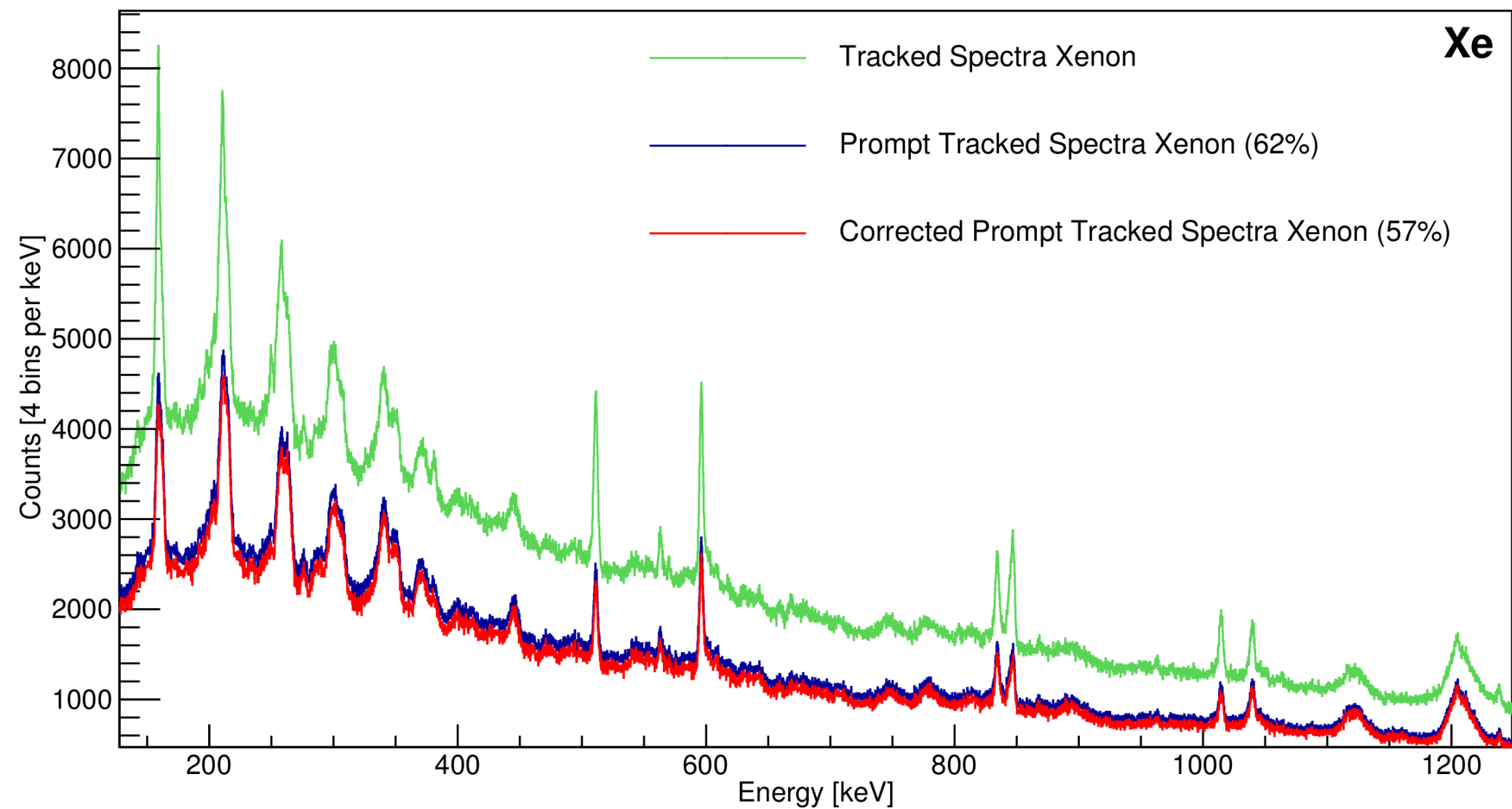
Particle coincidence by a cut on TAC between PRISMA and DANTE



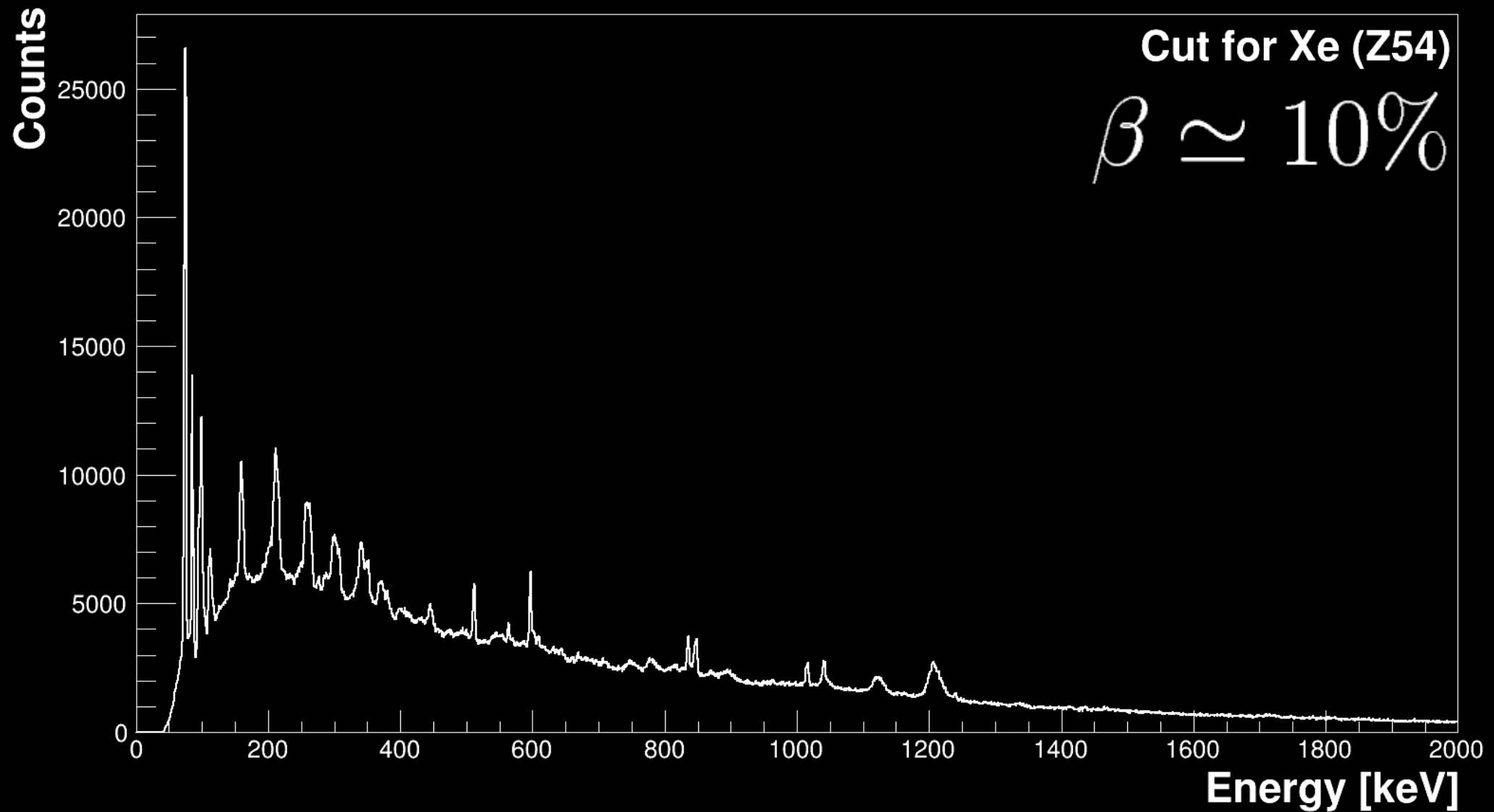
Counts in peaks



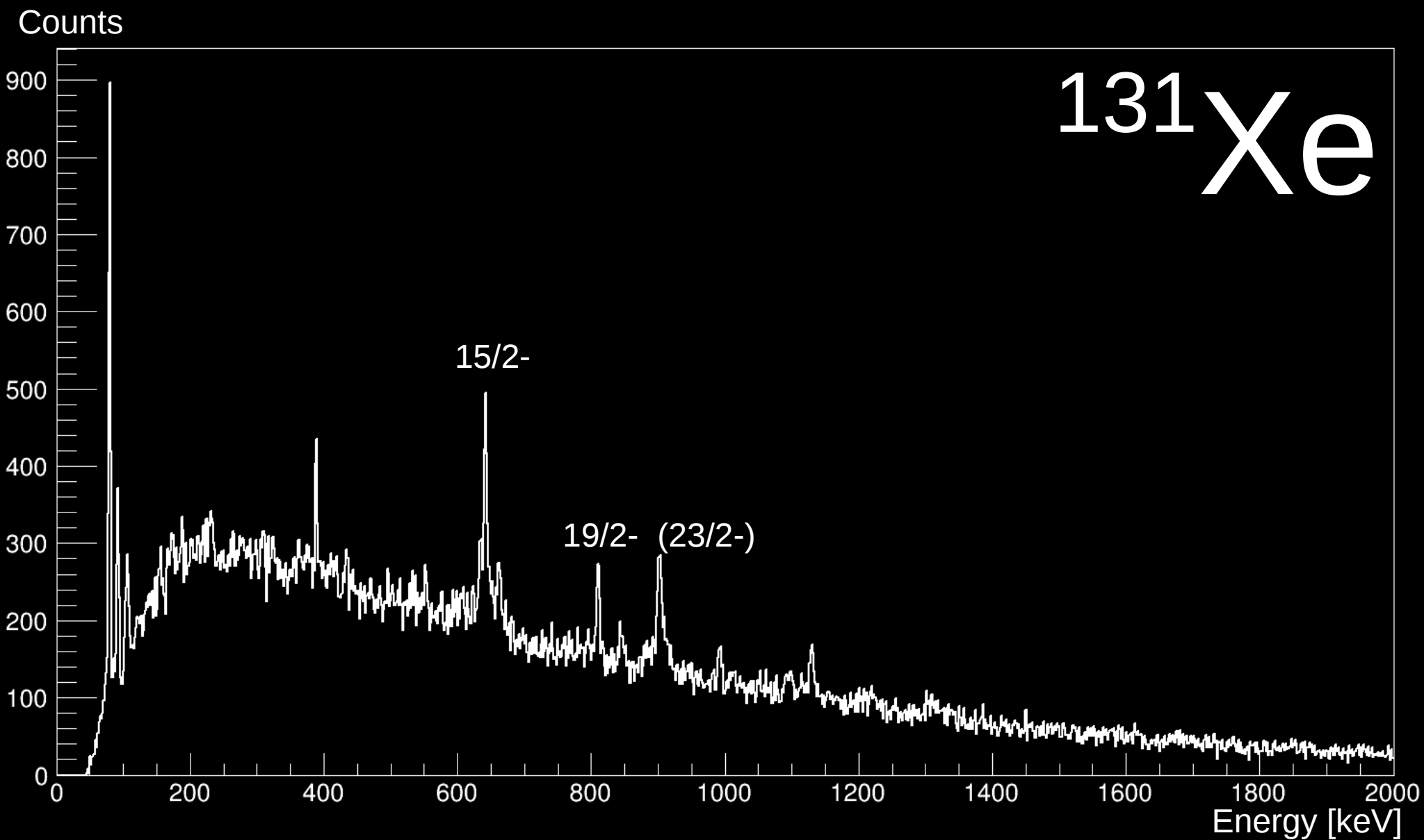
Background correction for Xe



Spectra after selection of Z equals 54 (Xe)



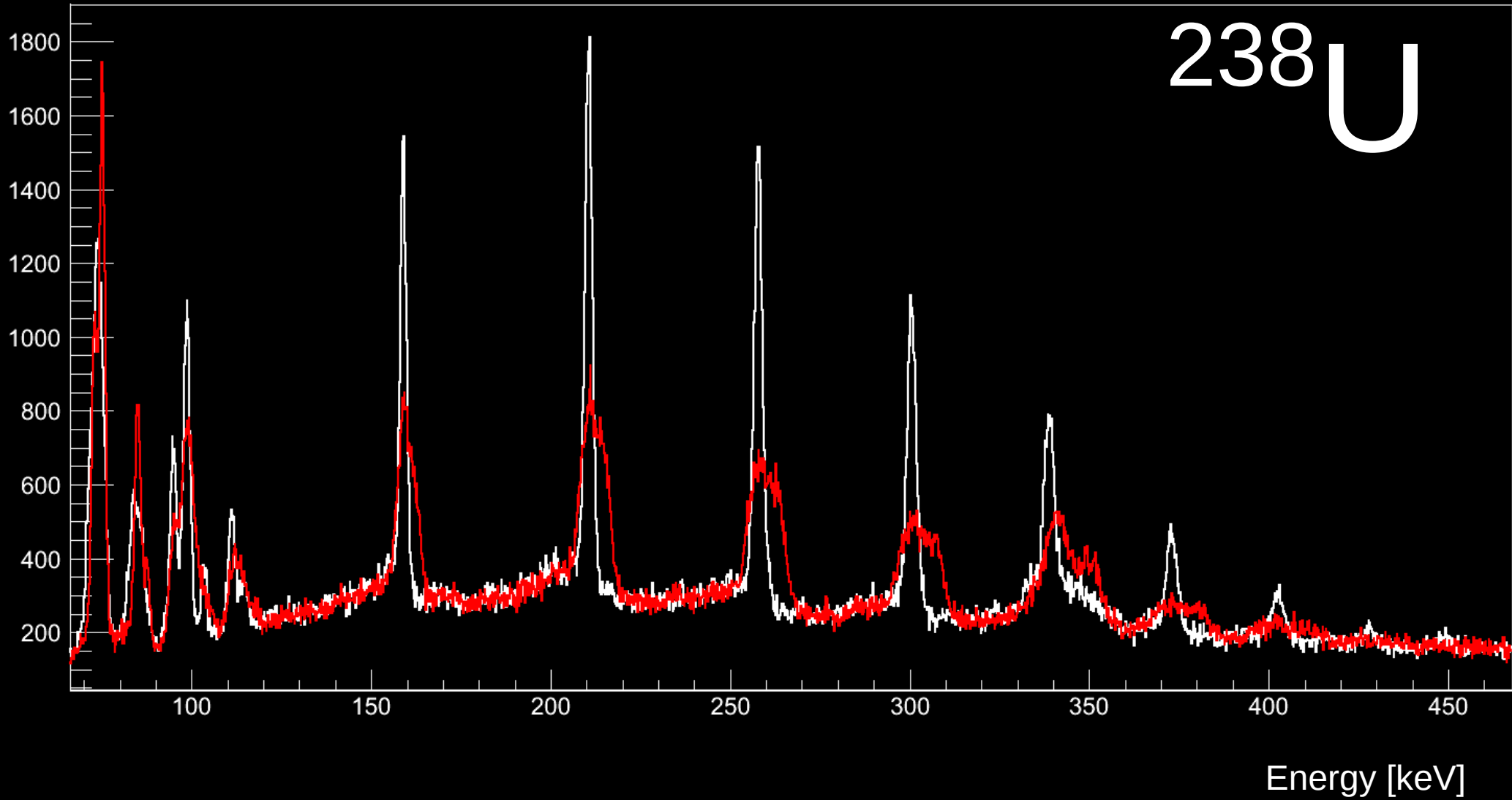
Doppler corrected spectra for beam like nuclei (Z=54 and A=131)



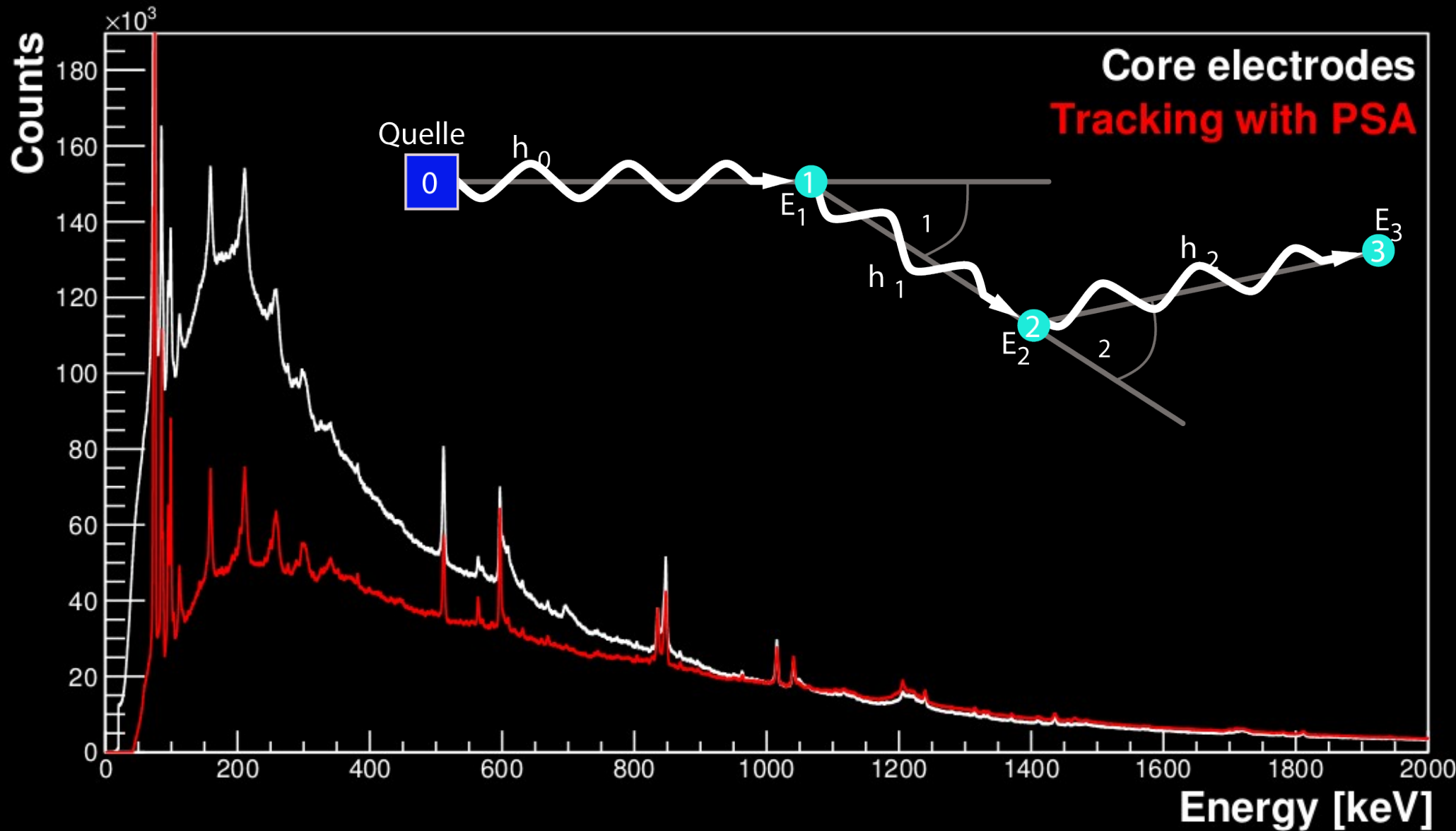
^{131}Xe is 5 Neutrons away from the beam

Doppler corrected spectra for target like nuclei ($Z=92$ and $A=238$)

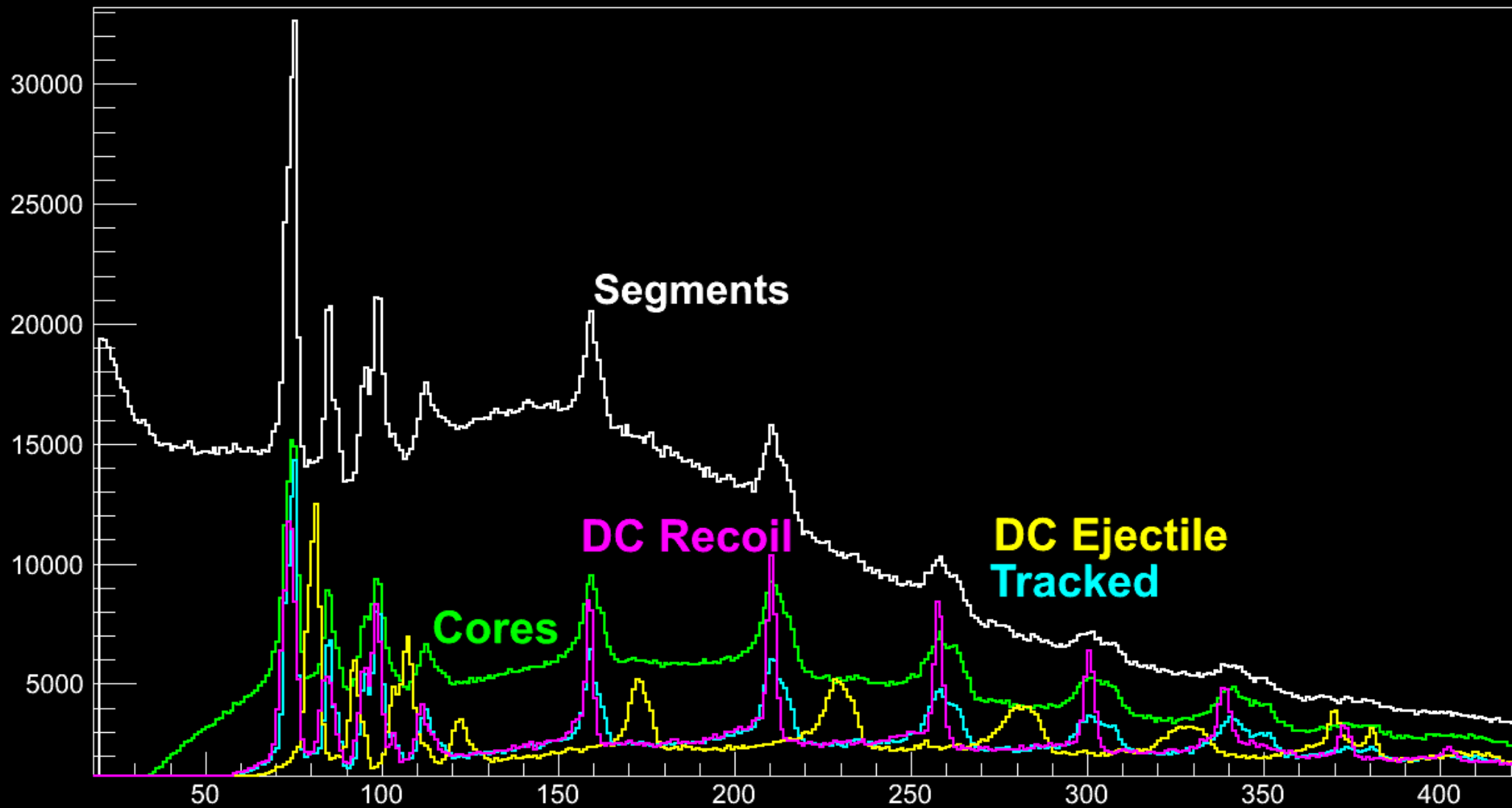
Counts



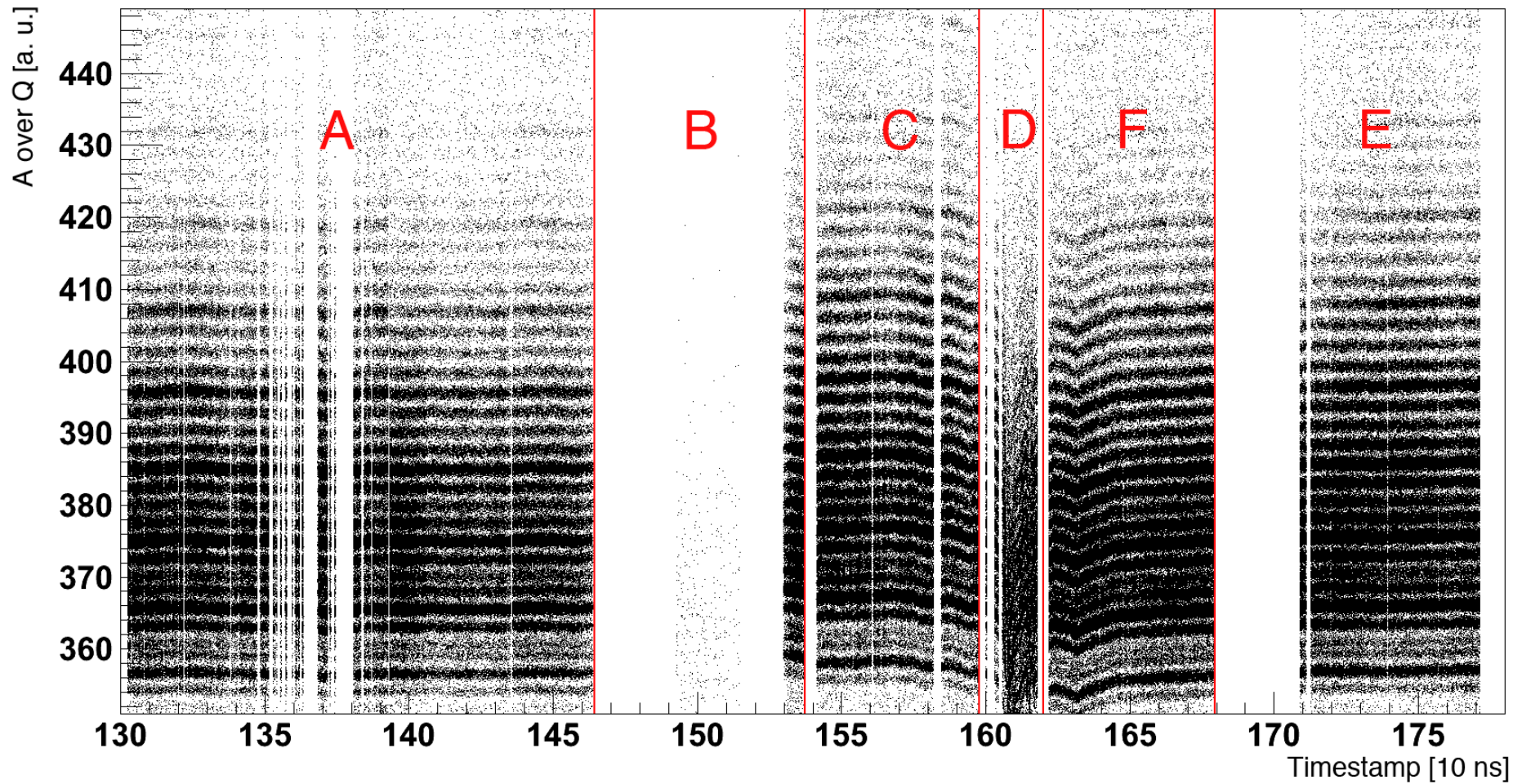
Preliminary Tracking Result



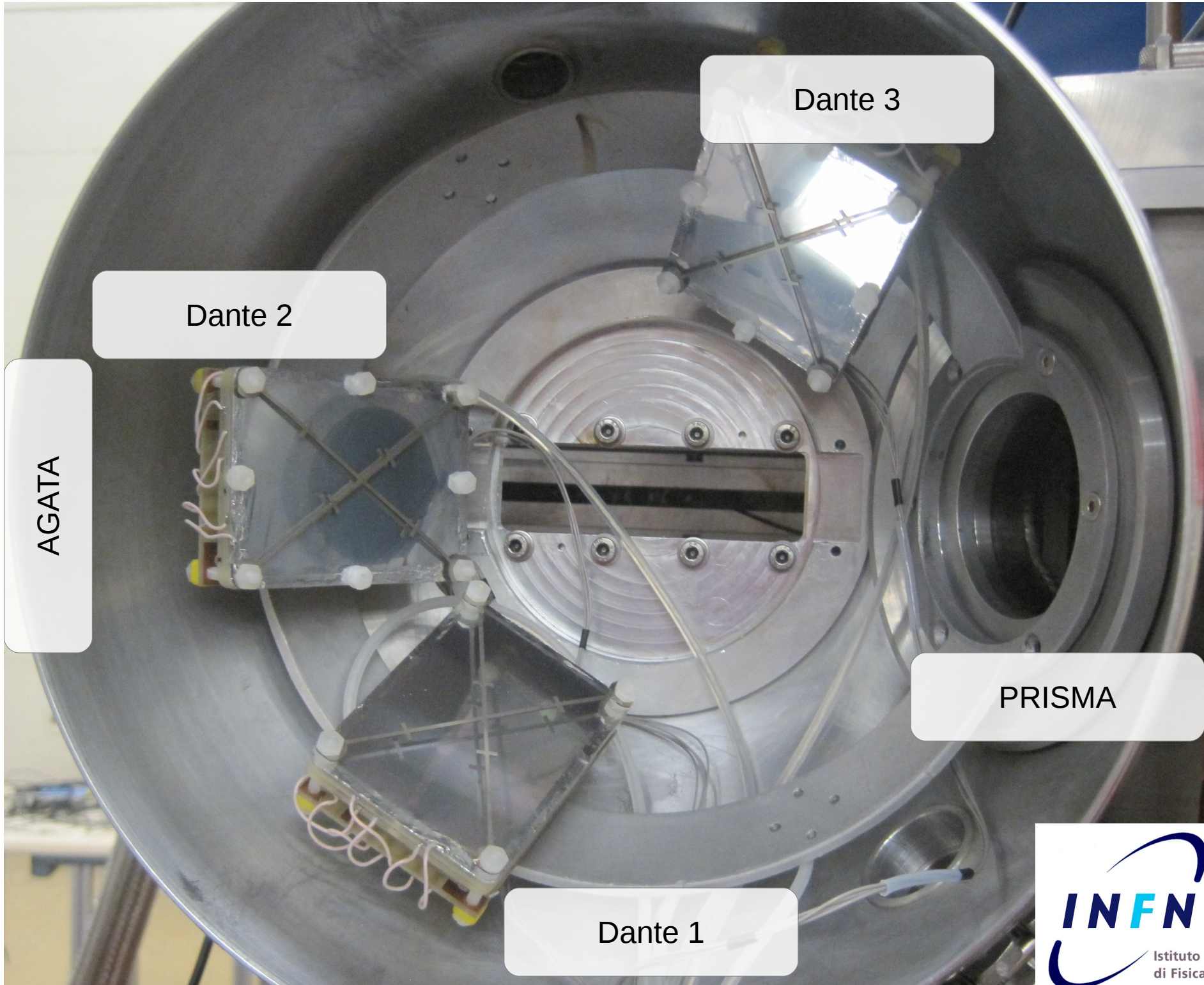
Preliminary Tracking Result



Time Dependence



A / Q for one TAC of the MWPPAC against Ancillary Time Stamp



Dante 3

Dante 2

AGATA

PRISMA

Dante 1