Neutron capture cross section of $^{88}Sr(n,\gamma)$, $^{89}Y(n,\gamma)$ @EAR1

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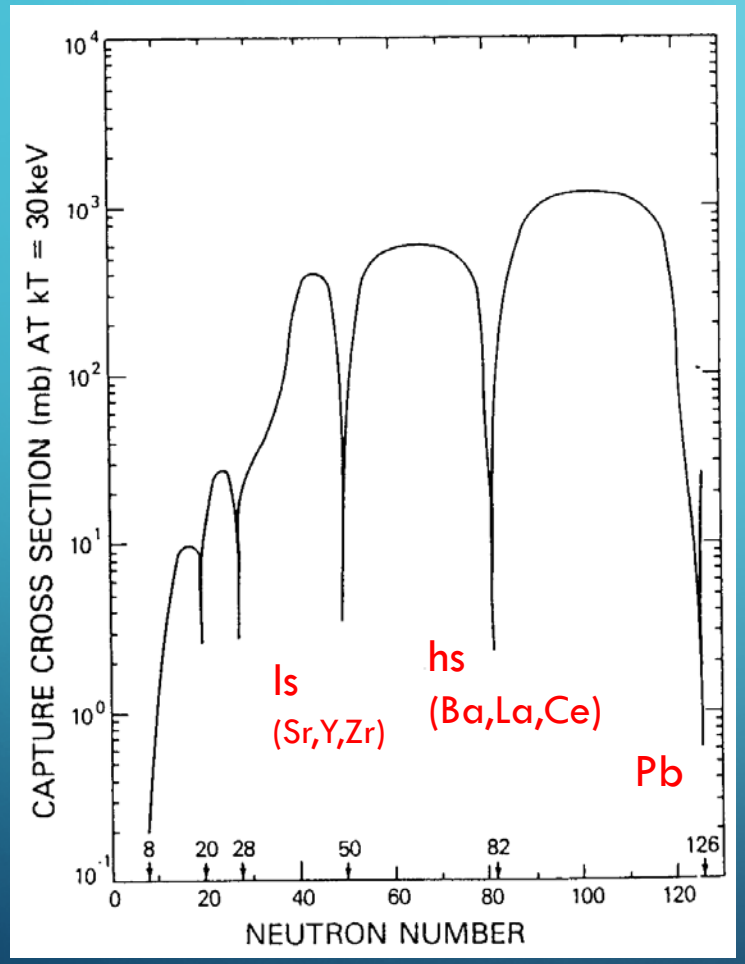
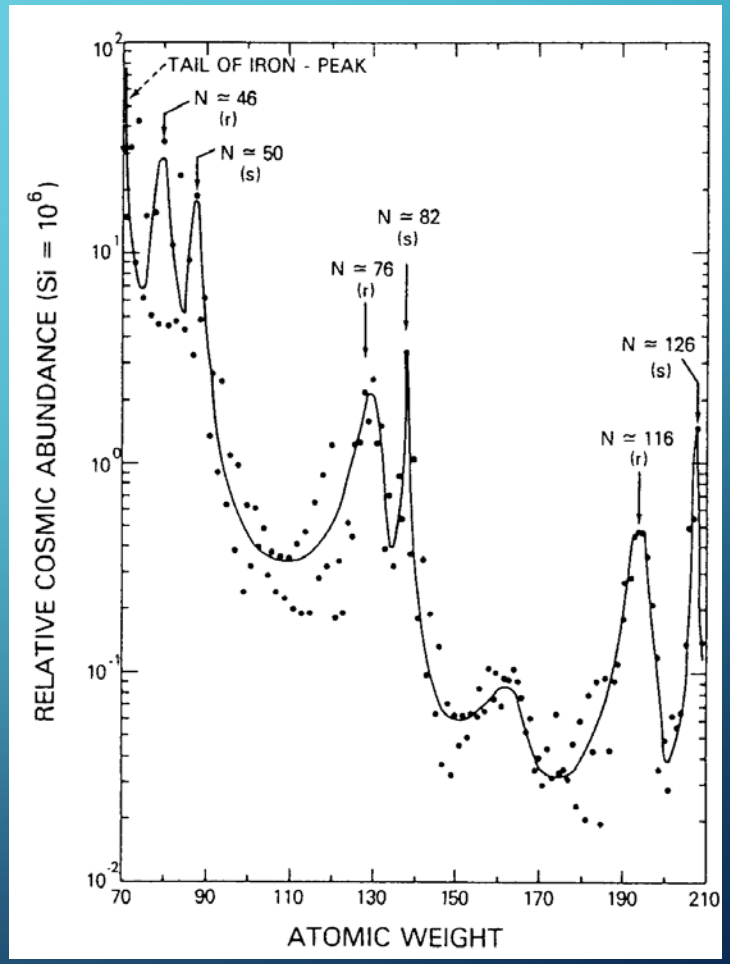
Collaboration meeting n_TOF Italia, Teramo 26-27 March 2018

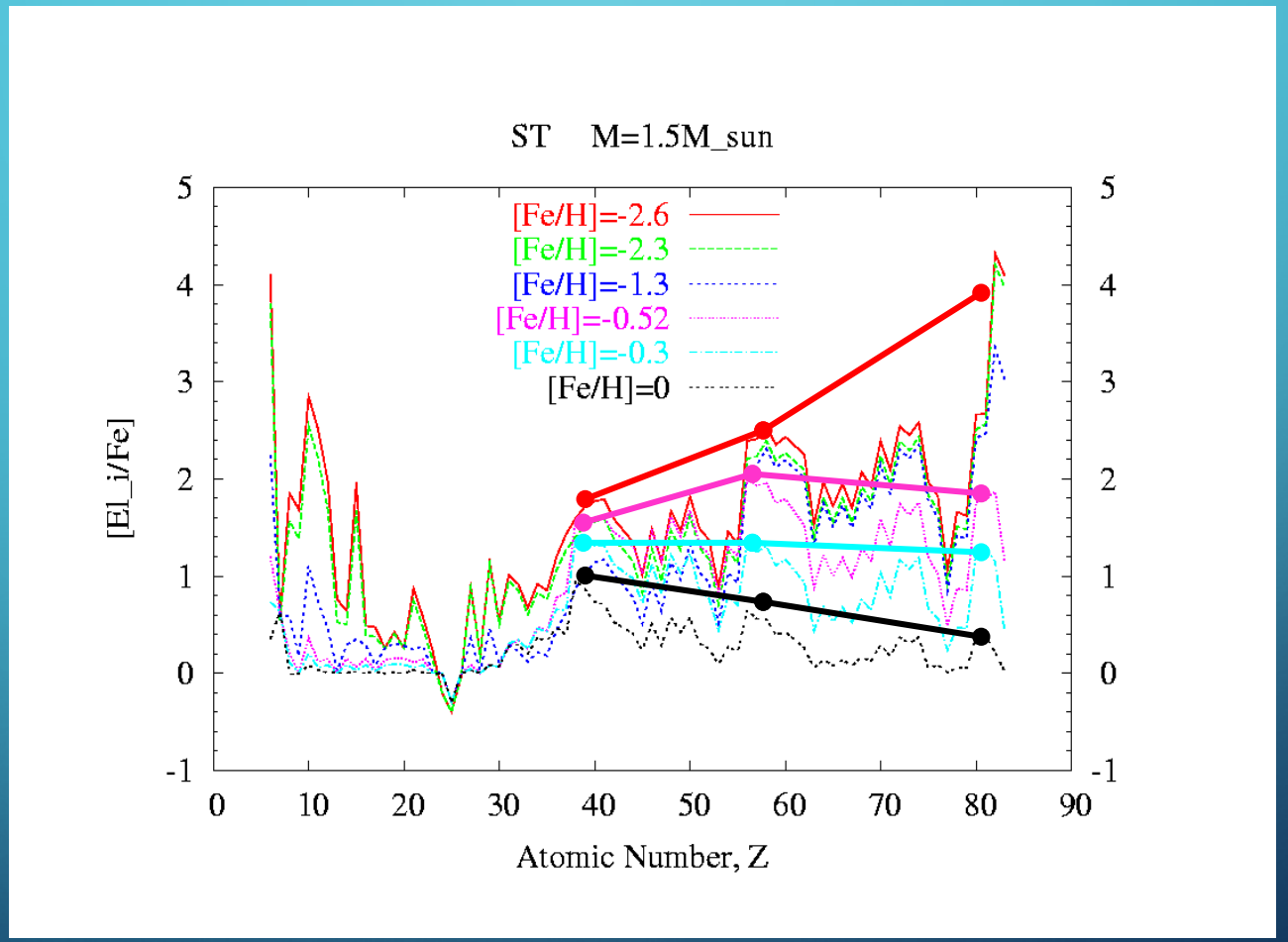
MOTIVATIONS





S. Cristallo

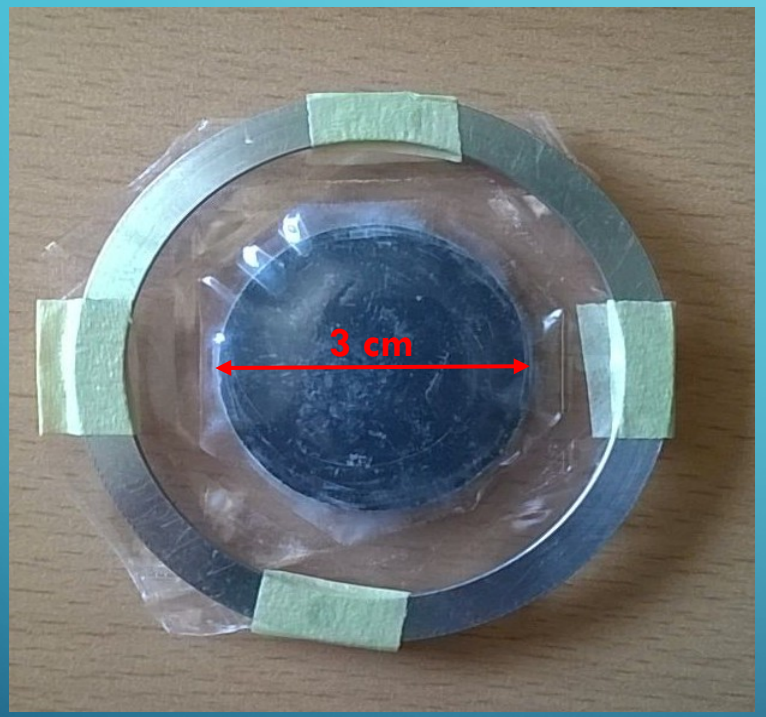
MOTIVATIONS



S. Cristallo

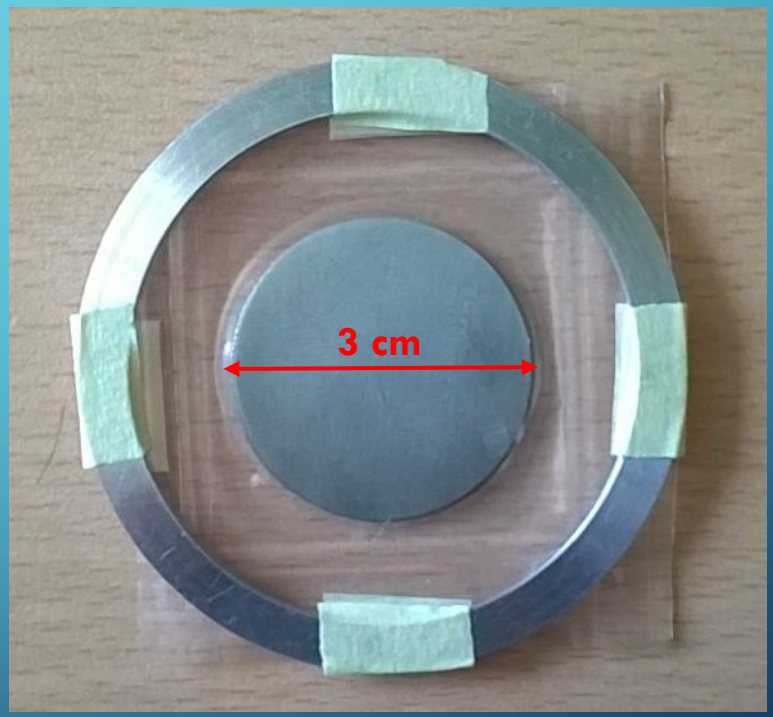
^{89}Y AND ^{88}Sr SAMPLES

^{88}Sr is the most abundant Sr isotope



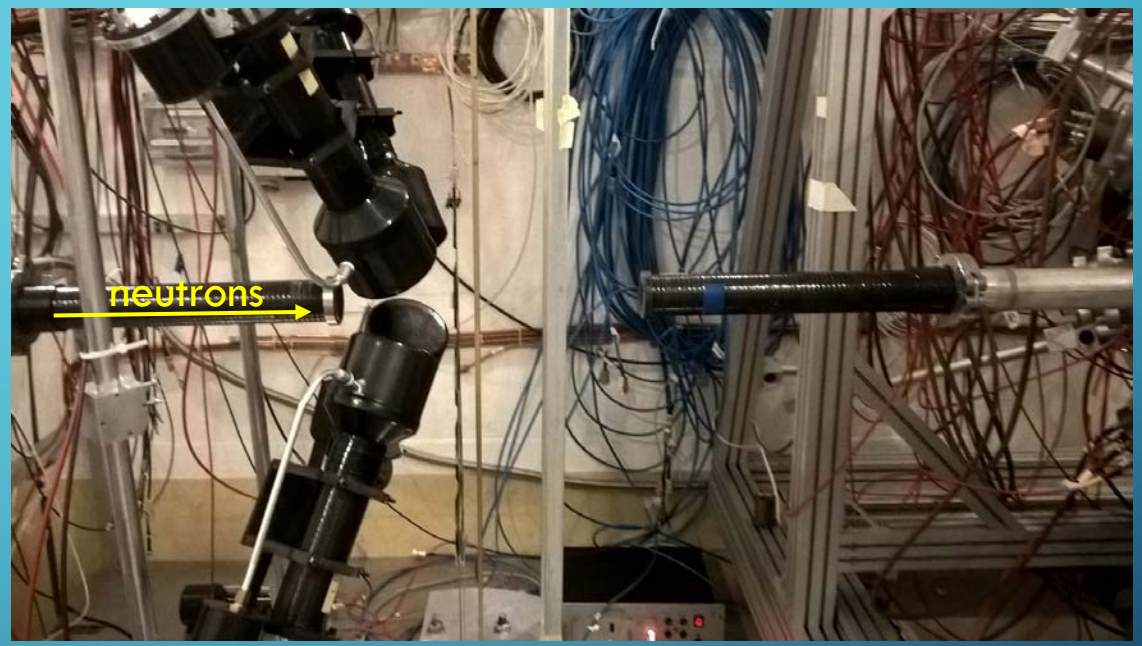
ISOFLEX
carbonate powder with an enrichment > 99.9%

^{89}Y is the only stable isotope of Y



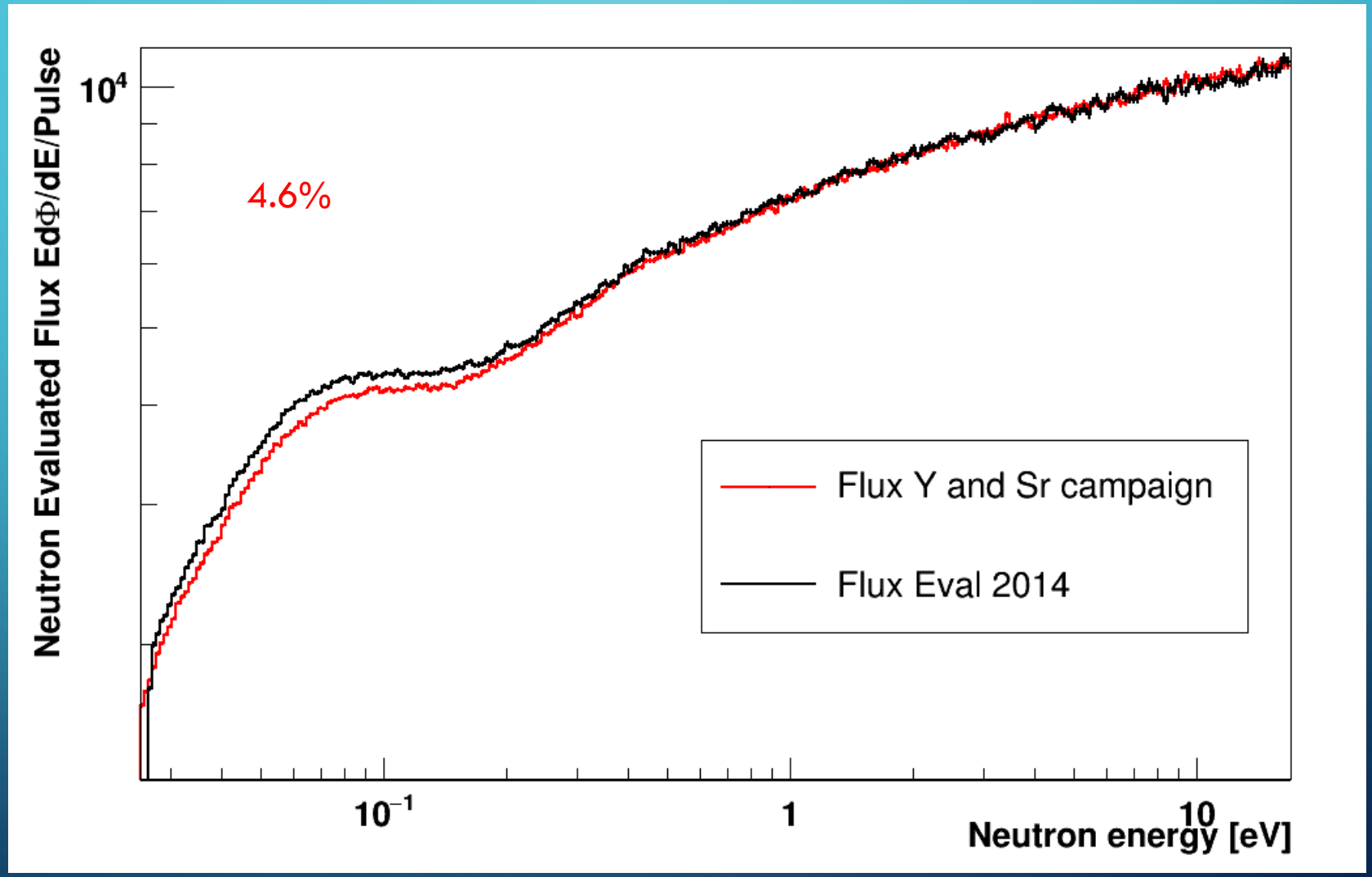
Goodfellow
metal disk with a purity of 99,9%

EXPERIMENTAL SET-UP



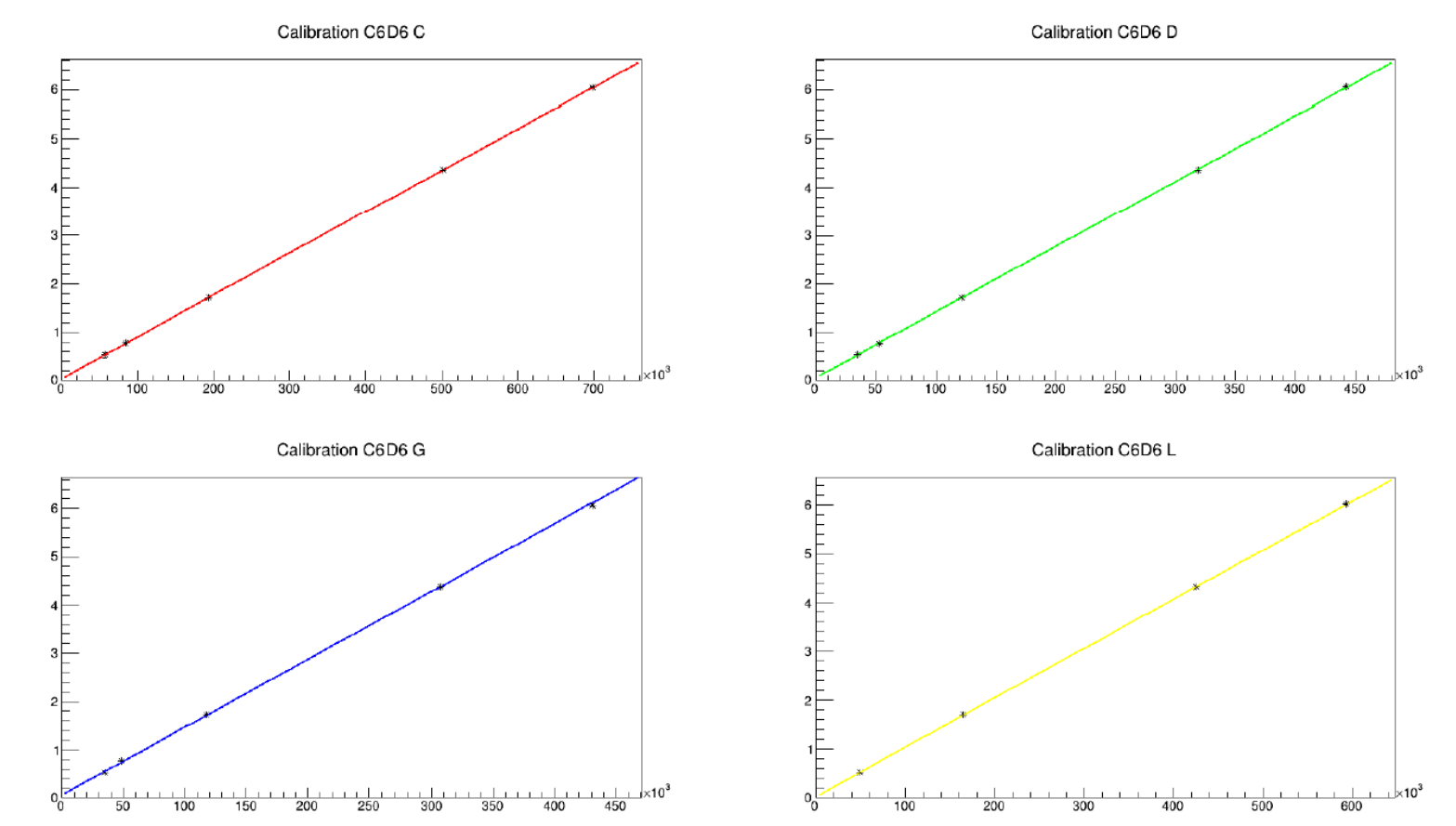
- SiMon a silicon neutron beam monitor based on the $^{6}Li(n,t)\alpha$ reaction
- 4 C_6D_6 Liquid scintillators
- Sample Exchanger

EXTRACTED FLUX IN EAR1

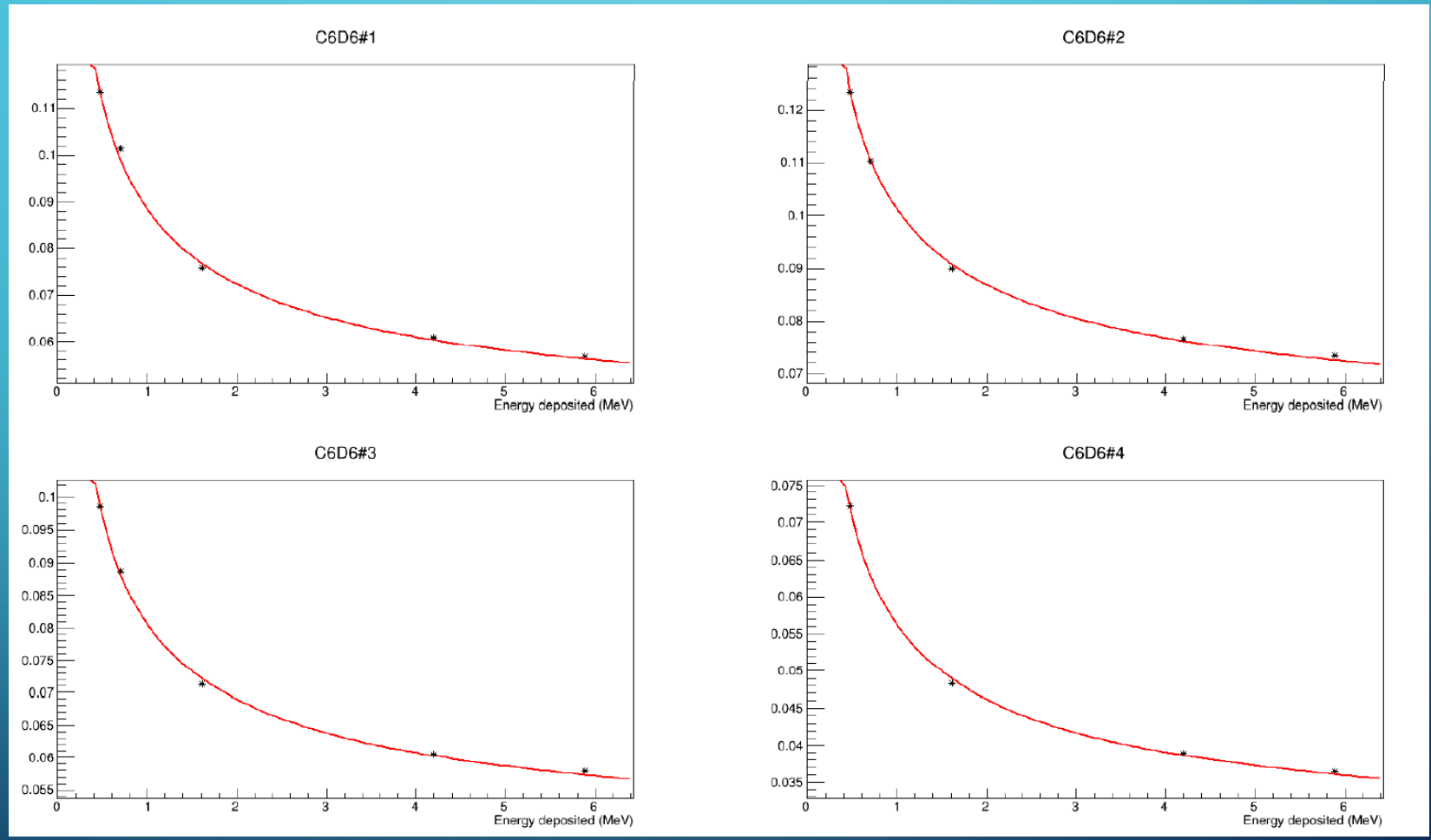


ENERGY CALIBRATION OF THE C6D6 DETECTORS

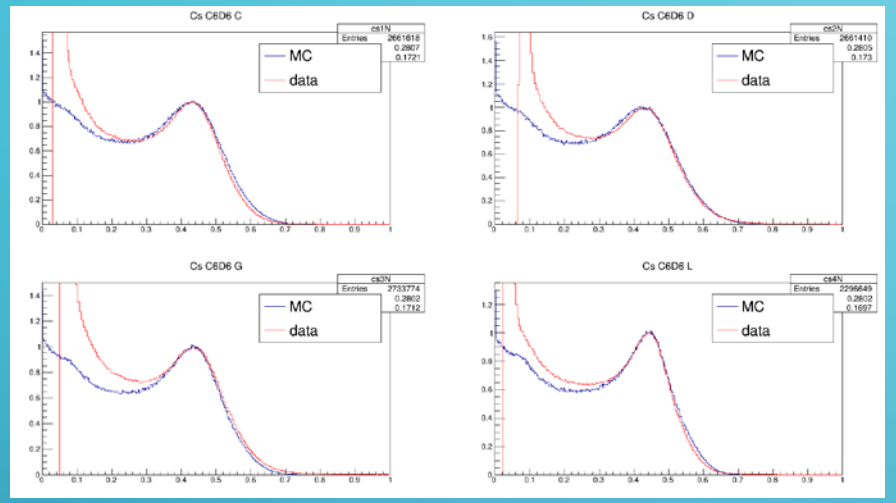
Calibration γ-ray sources: ^{137}Cs, ^{88}Y, AmBe, CmC

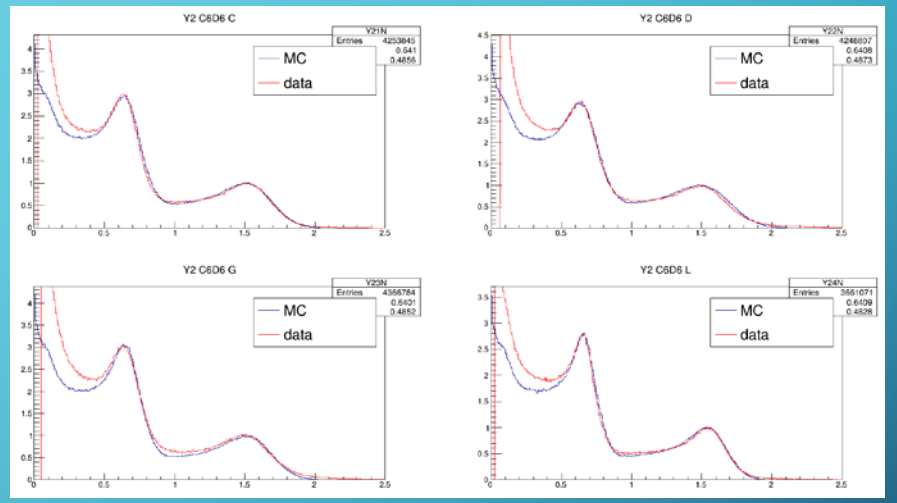


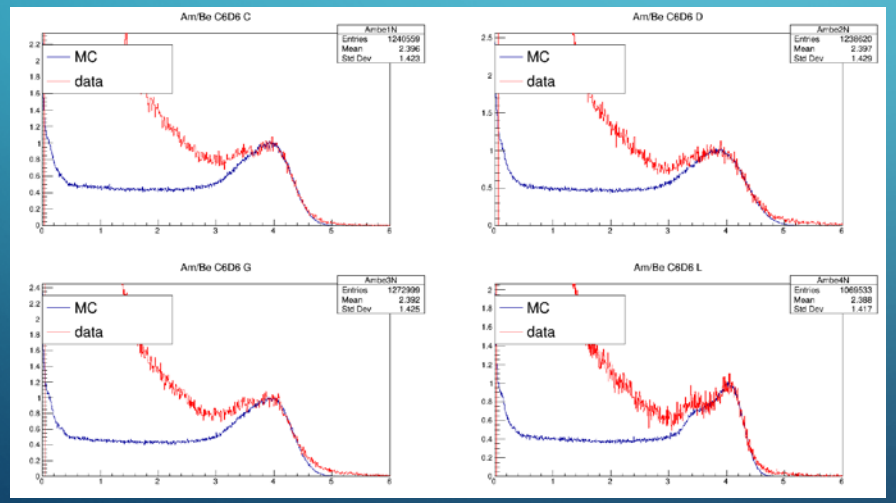
EXPERIMENTHAL RESOLUTION FUNCTION

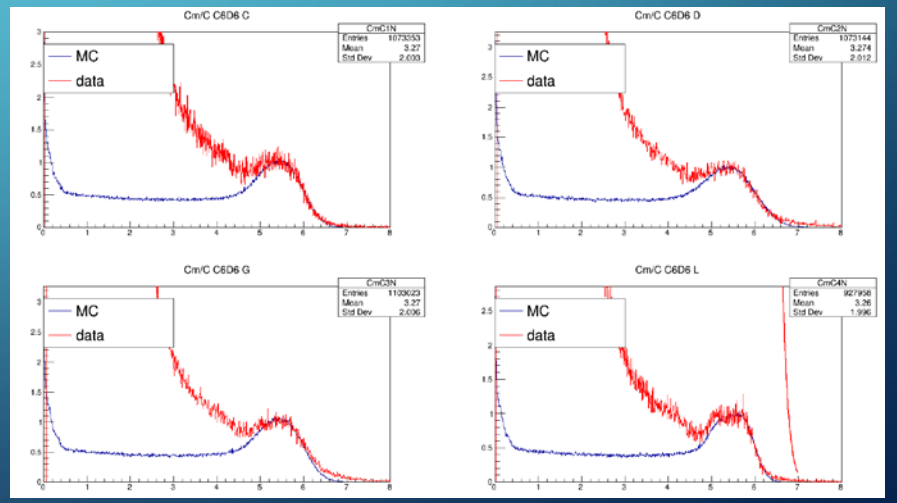


COMPARISON BETWEEN R(E,i) AND THE EXPERIMENTAL RESPONCE

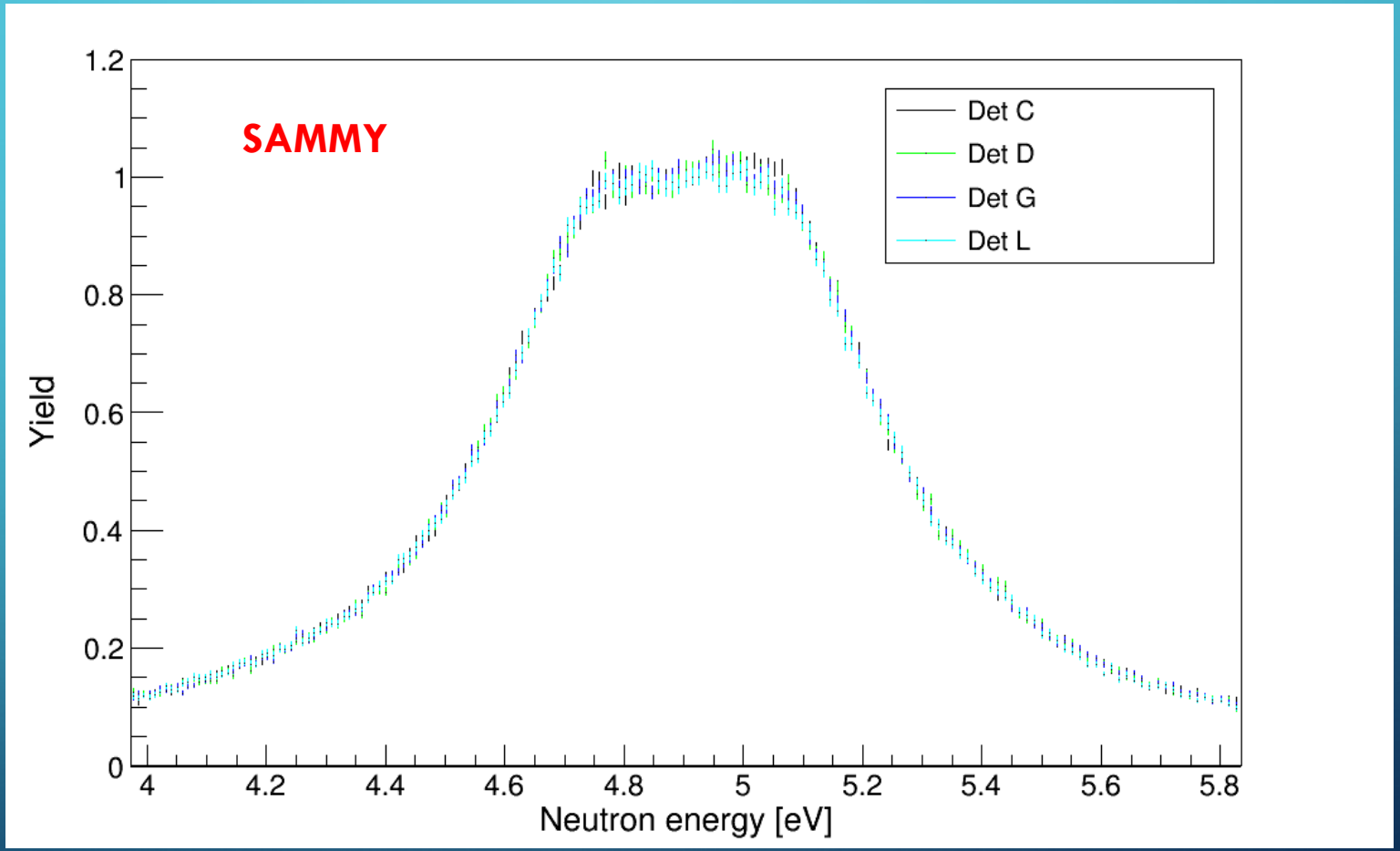




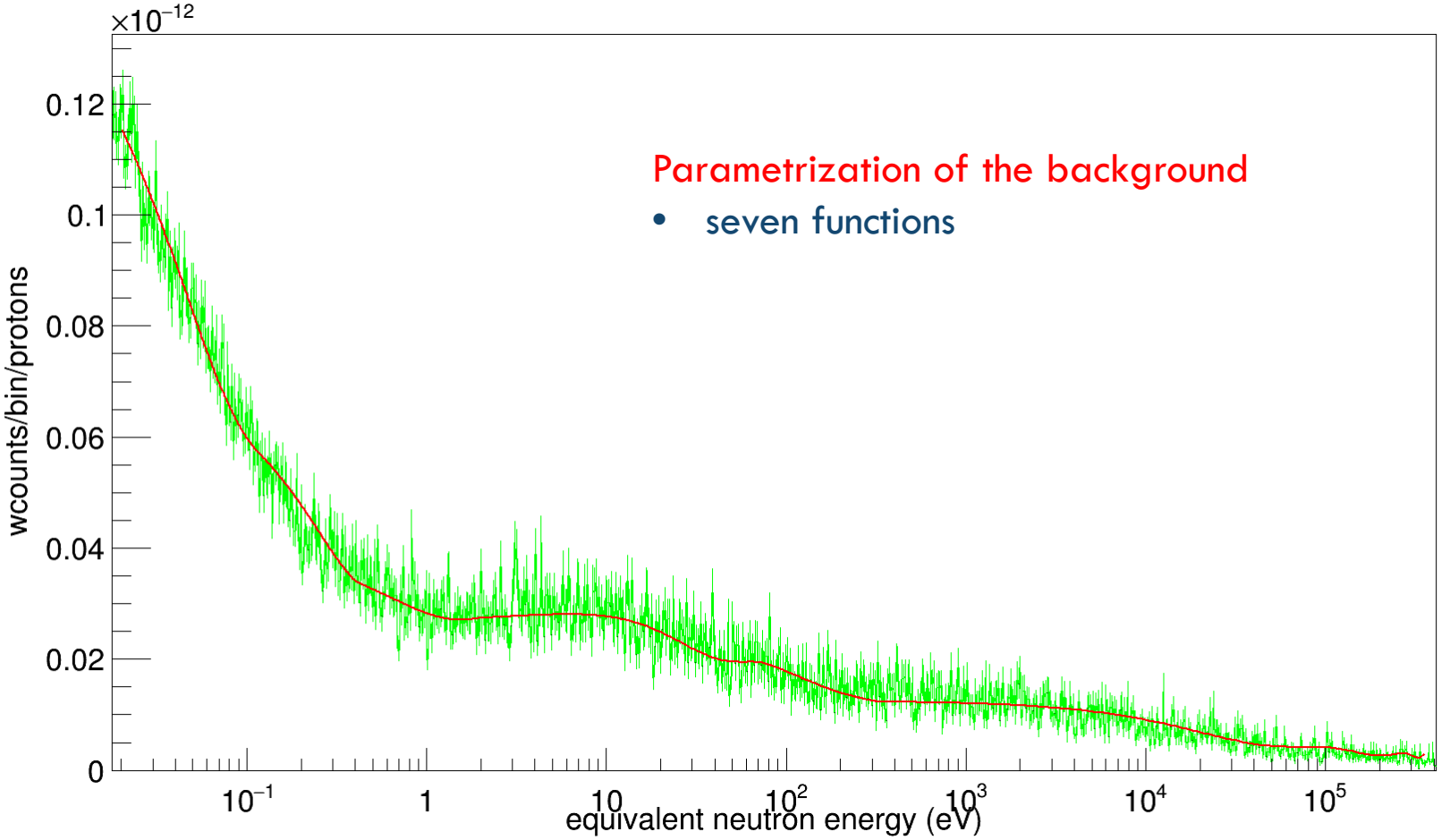




GOLD PEAK NORMALIZATION



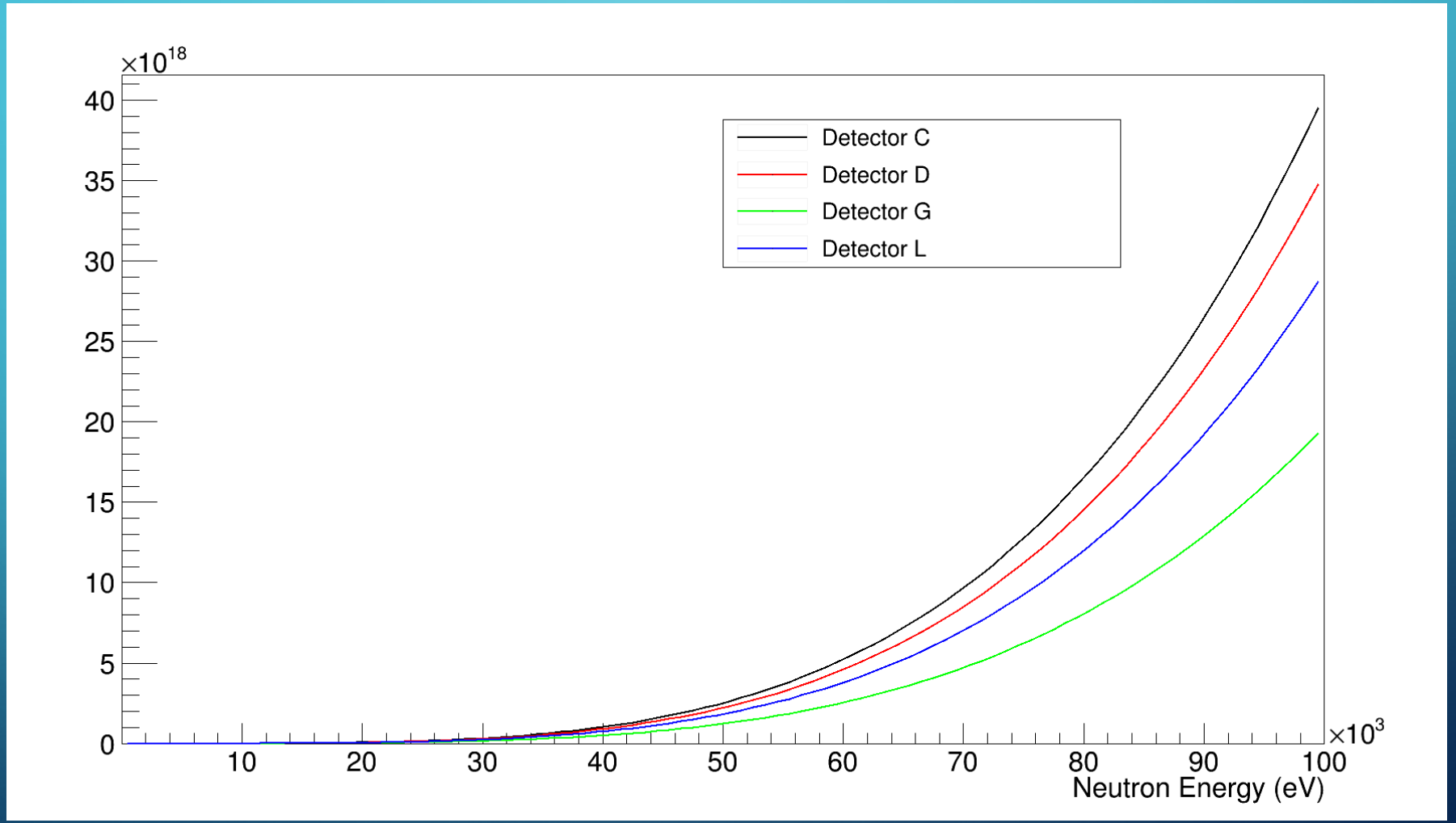
^{89}Y ANALISIS - BACKGROUND



Parametrization of the background

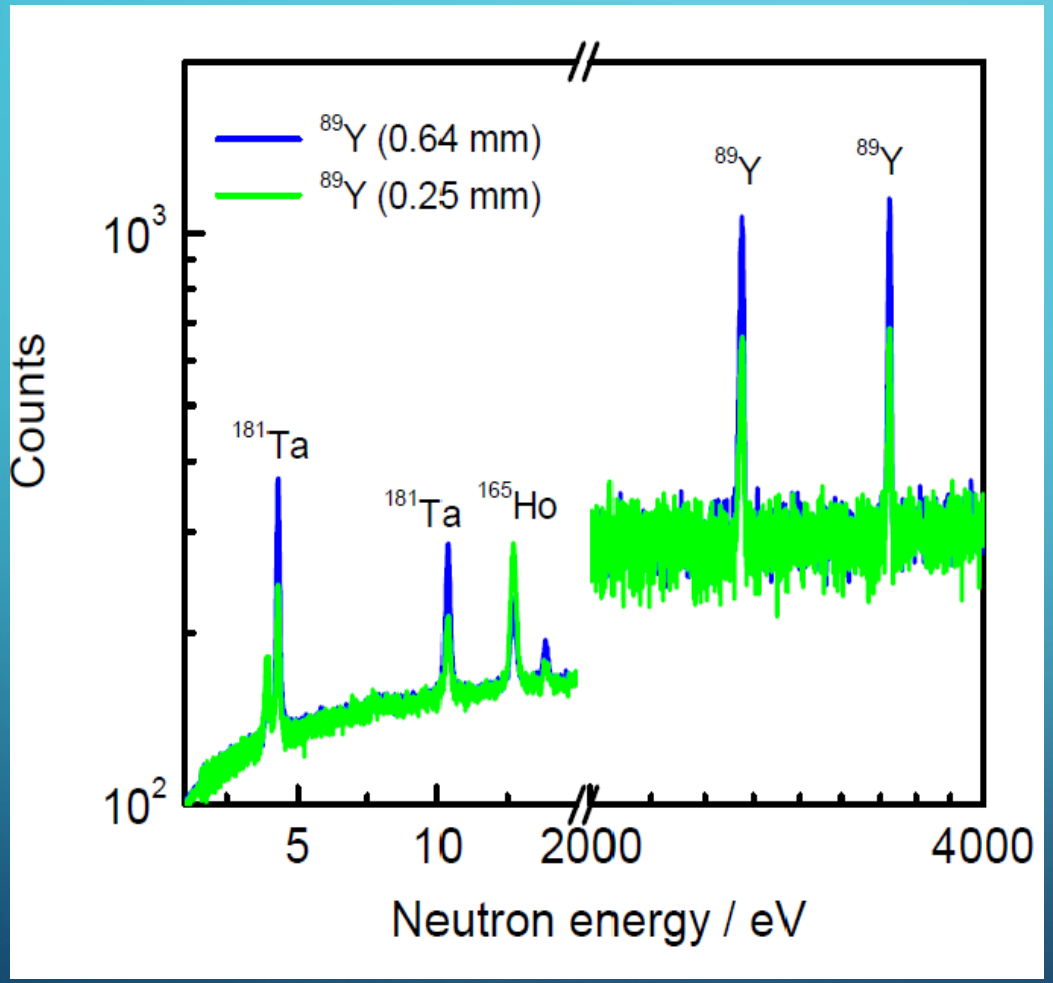
- seven functions

^{89}Y ANALISIS - WF



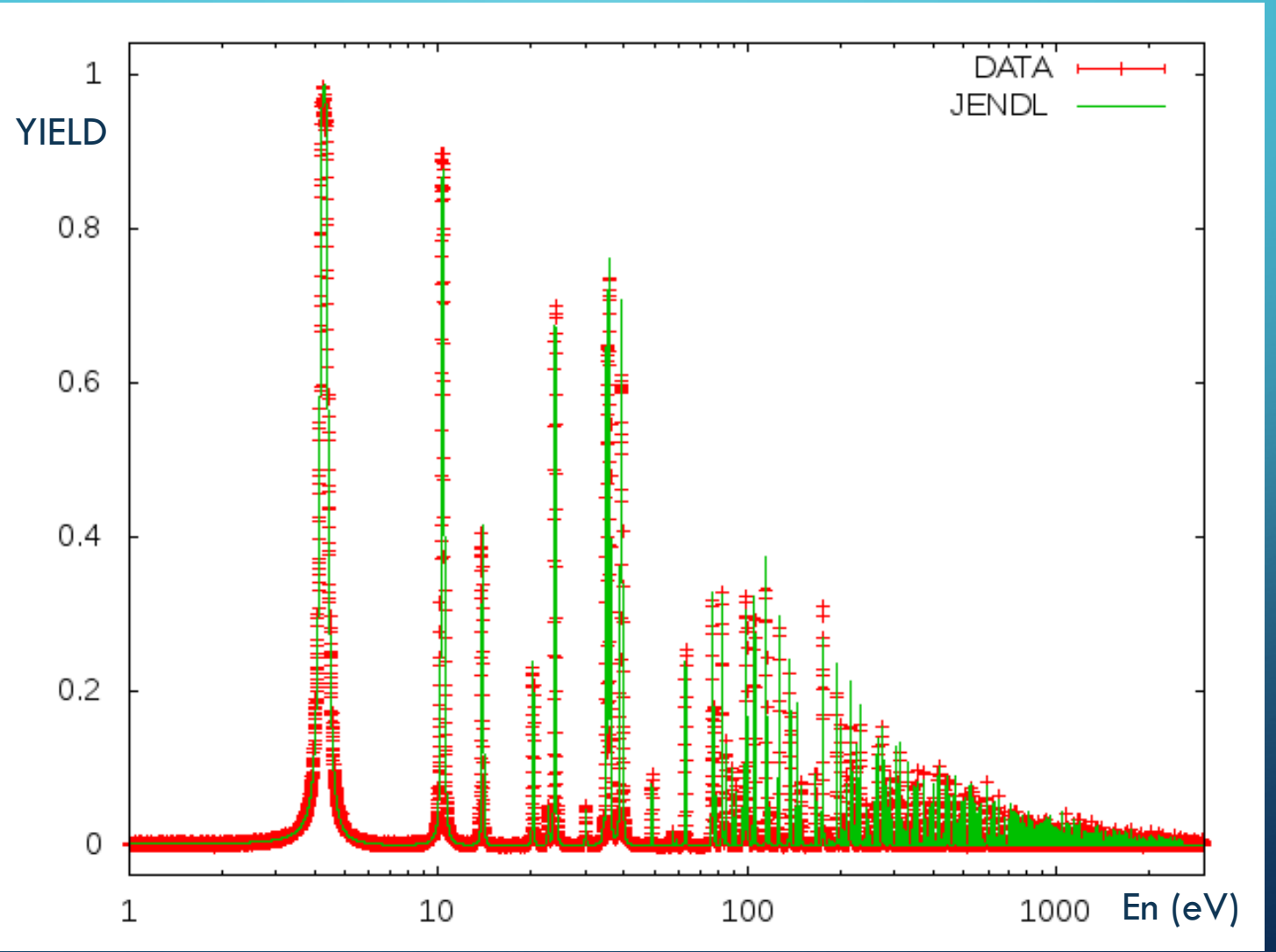
A. Mazzone

^{89}Y ANALISIS - CONTAMINANTS

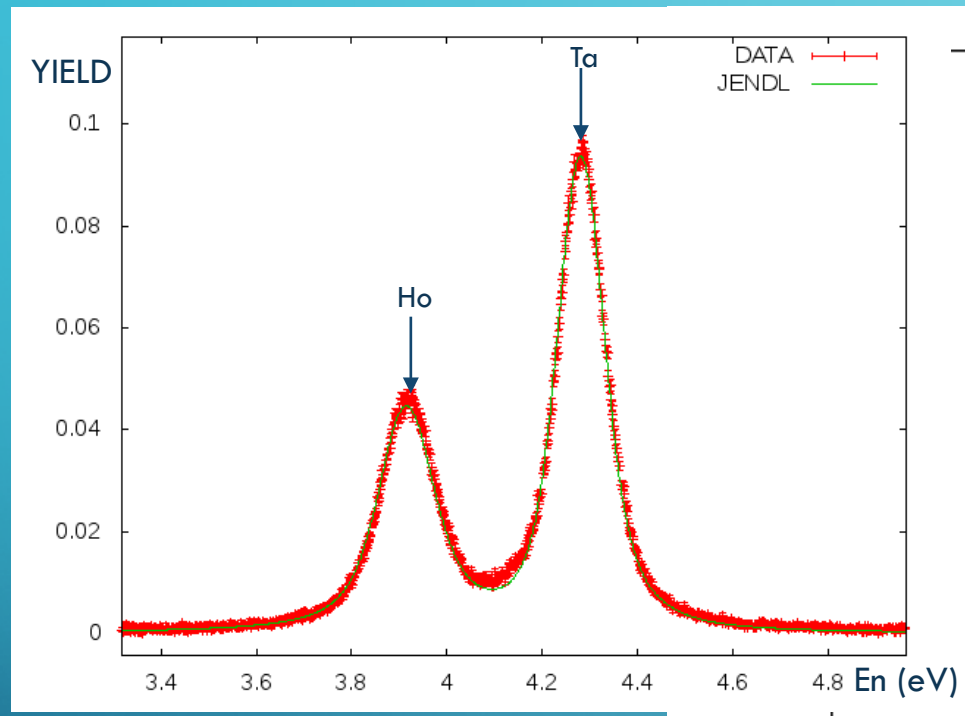


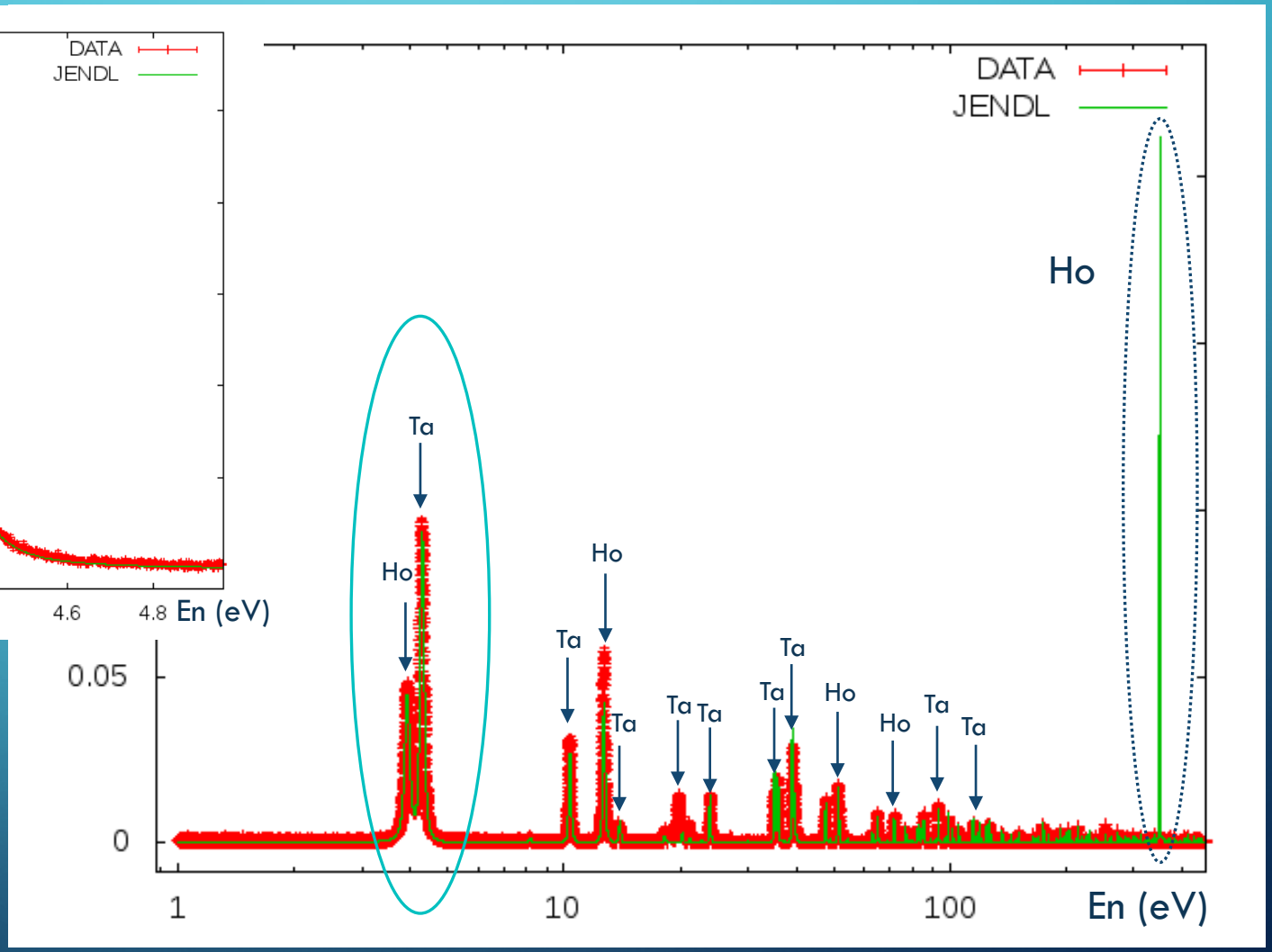
Peter Schillebeeckx
JRC Geel, SN3S

^{89}Y ANALISIS - CONTAMINANTS



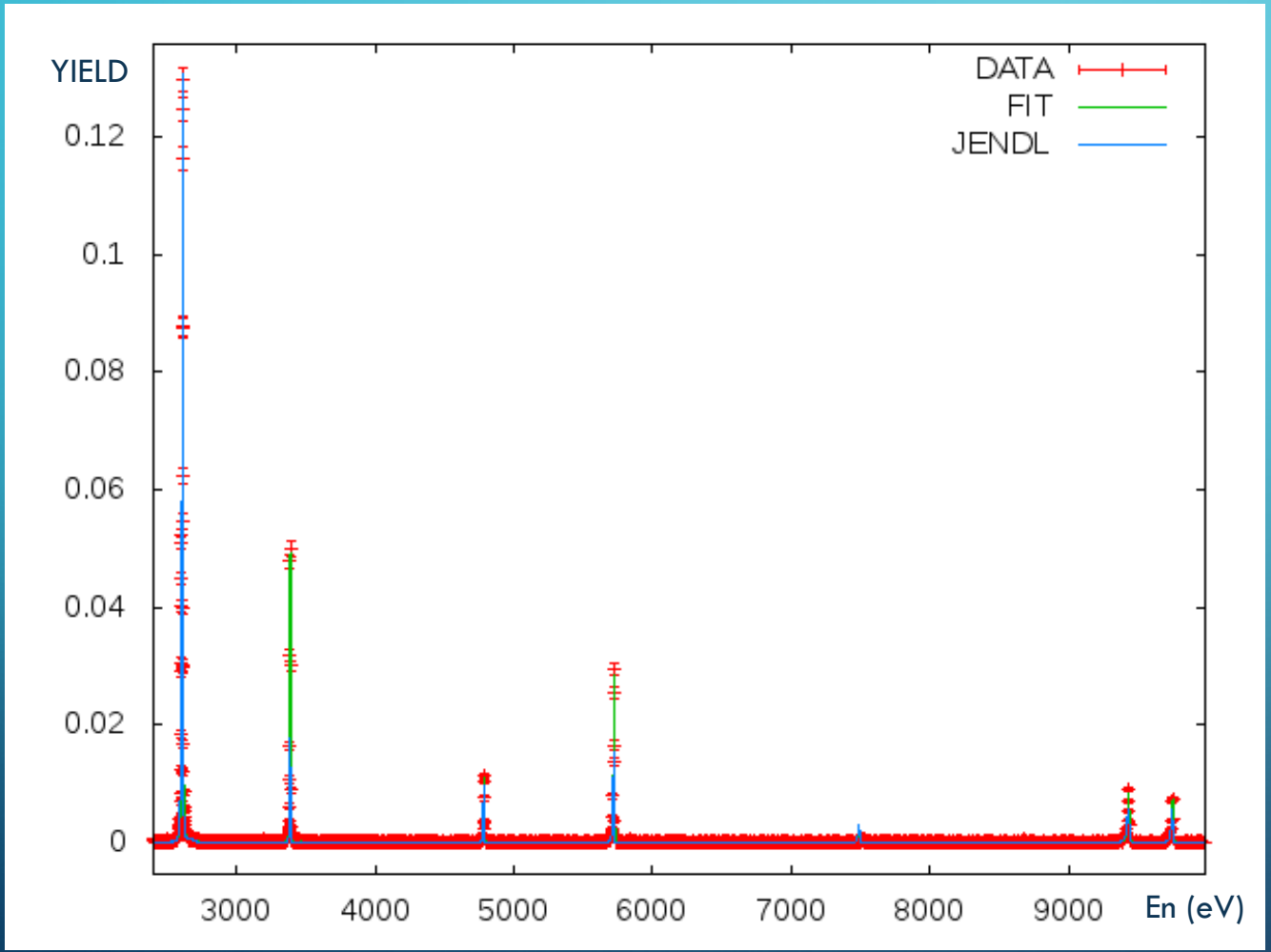
^{89}Y ANALISIS - CONTAMINANTS

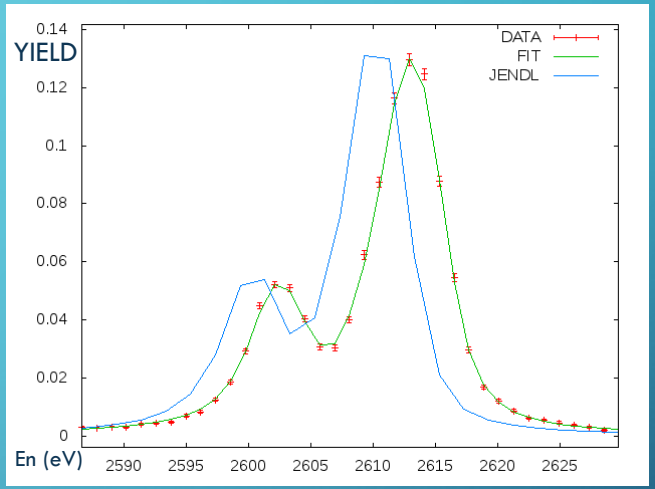


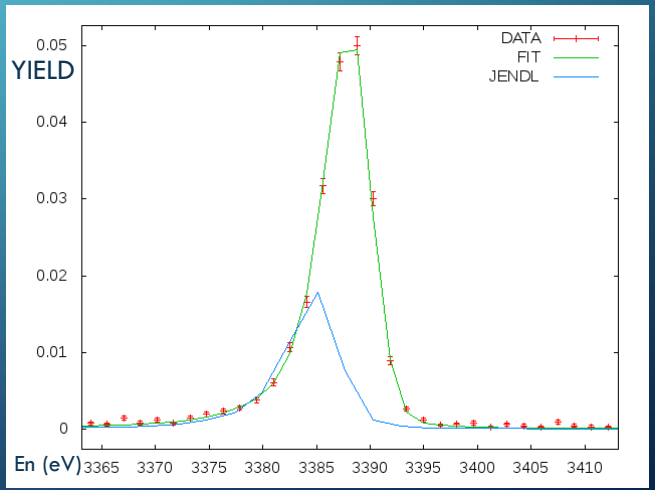


Ta = 0.295%
Ho = 0.226%

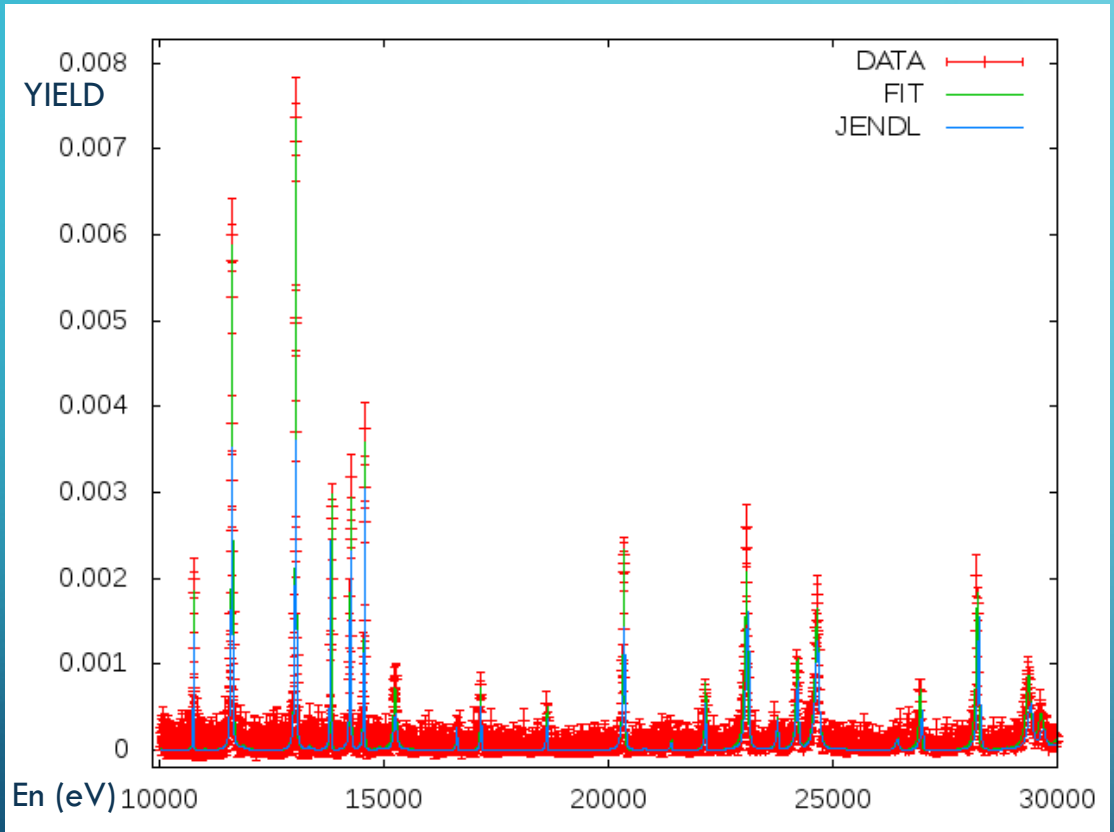
^{89}Y ANALISIS - FIT

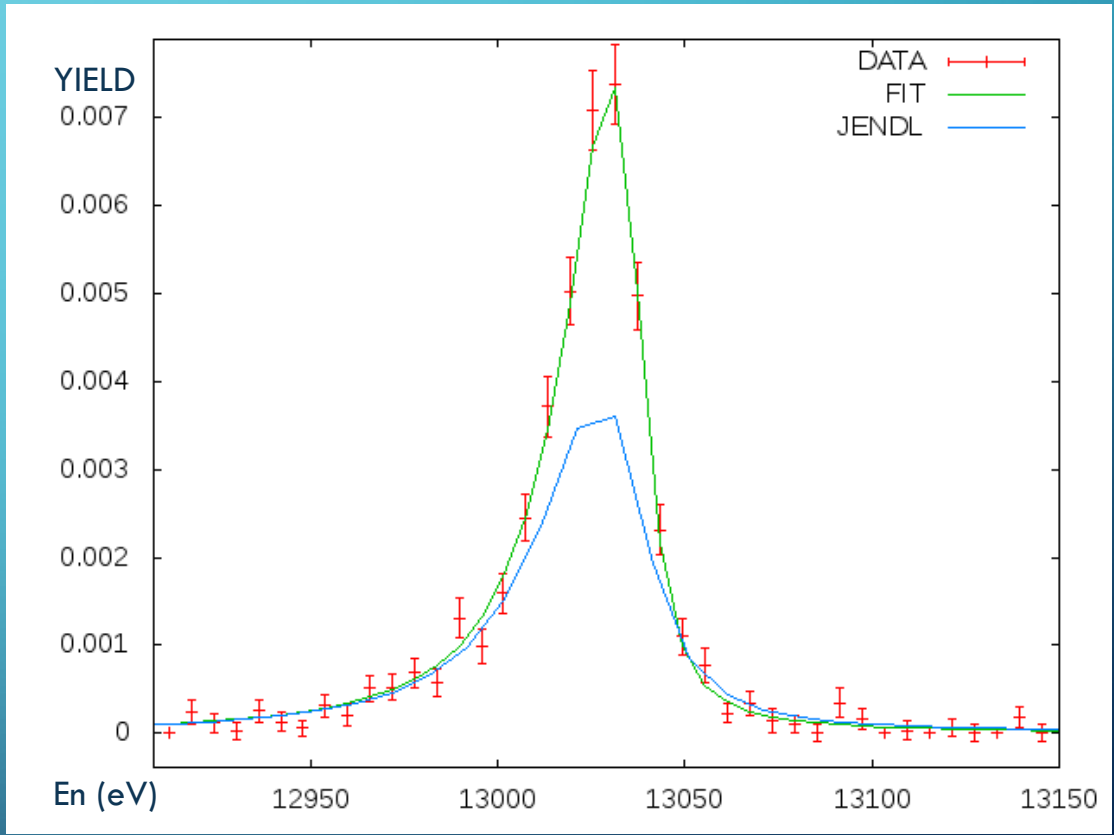




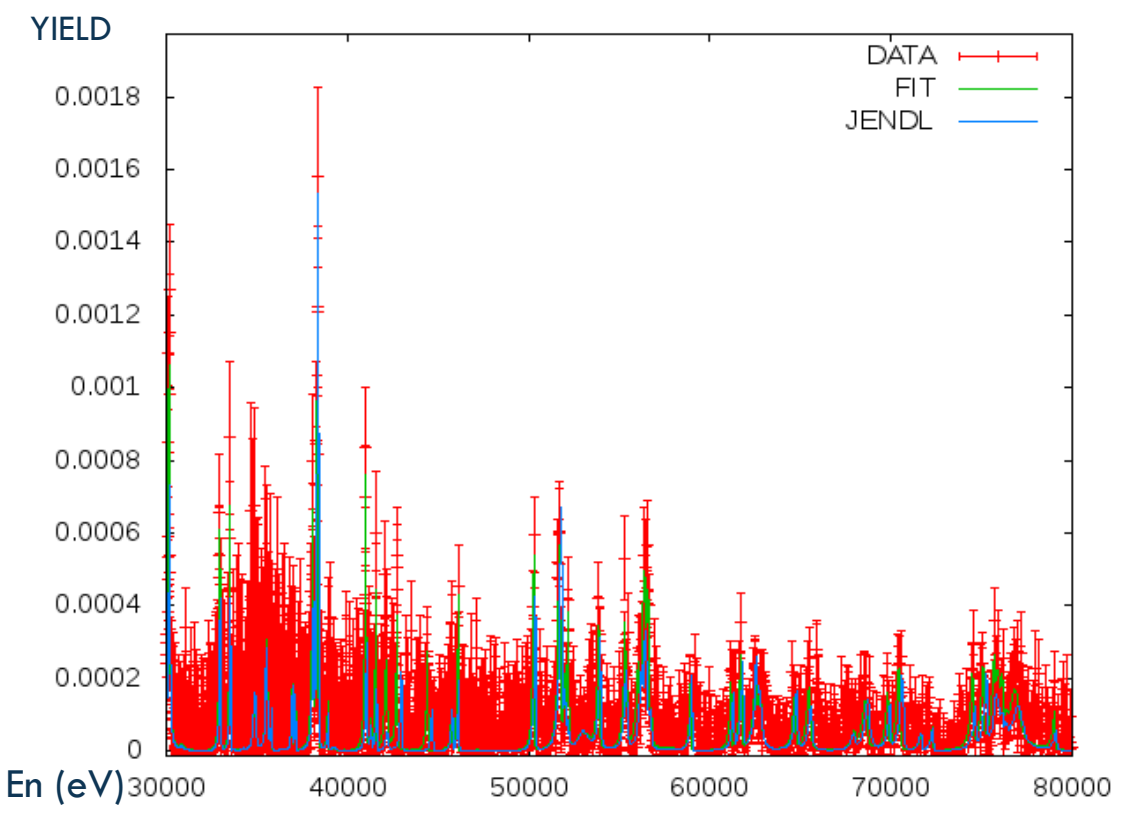


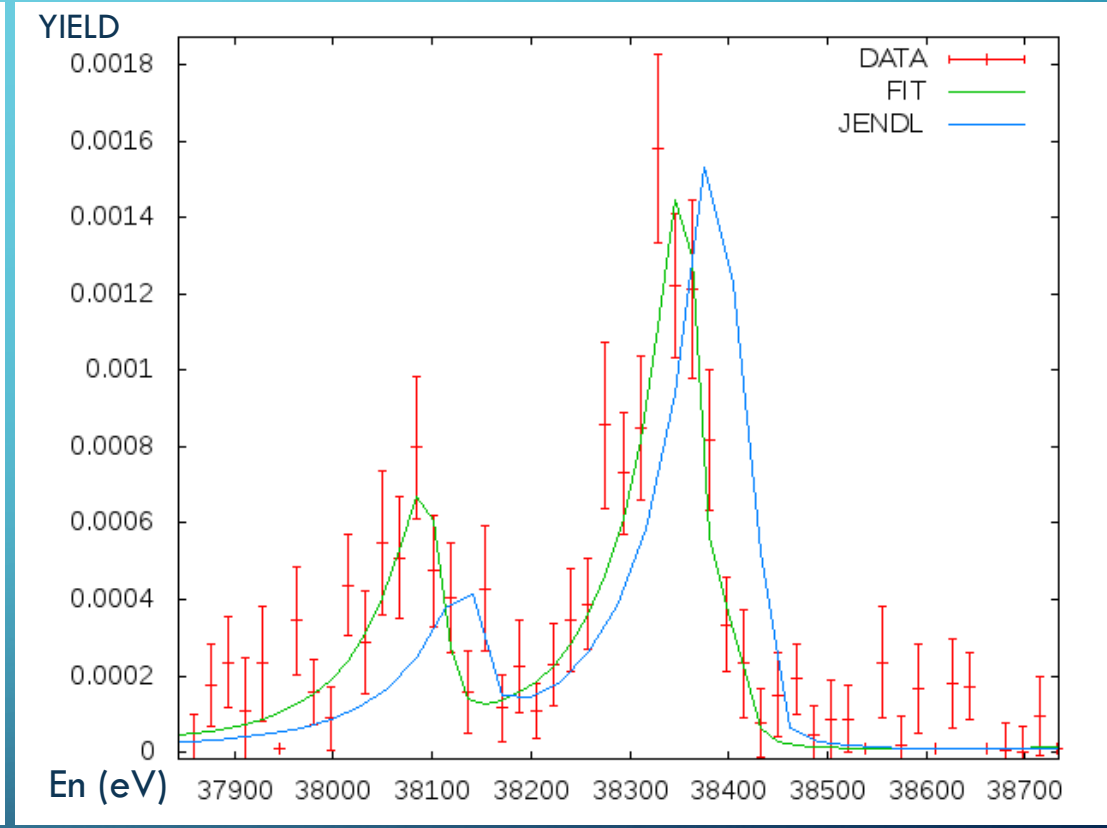
^{89}Y ANALISIS - FIT





^{89}Y ANALISIS - FIT





CONCLUSIONS

- We plan to finish the ^{89}Y analysis in few weeks.
- We are planning to ask to analyze the sample at Rez in order to have all the informations abut the contaminants and their abundances.
- The statistic with Sr is a bit lower, but we are confident we will get results with a sufficient accuracy.