# Evolution of Collectivity in the Vicinity of Pb-208: PRESPEC-AGATA Campaign at GSI 2012

L.G. Sarmiento, Lund University, Sweden

on behalf of the
S429 Collaboration

EGAN Darmstadt
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# The S429 collaboration

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A. Gottardo, E. Gregor, G. Guastalla, T. Habermann, M. Hackstein, A. Jungclaus, W. Korten,
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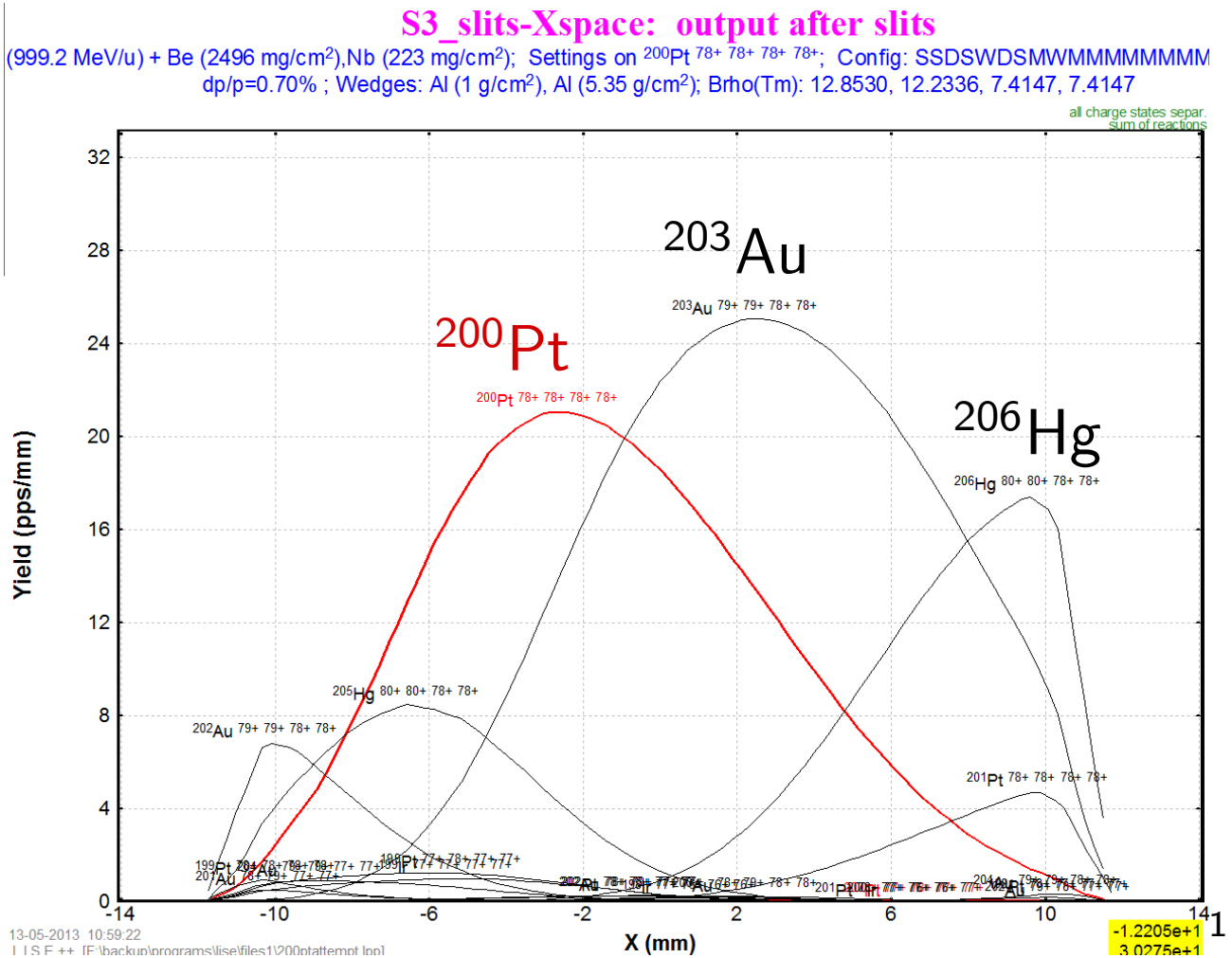
P. Reiter, P.H. Regan, Ch. Stahl, R. Stegmann, O. Stézowski, P. Thoele, A. Wendt, O. Wieland,
E. Wilson, H.-J. Wollersheim, R. Wood

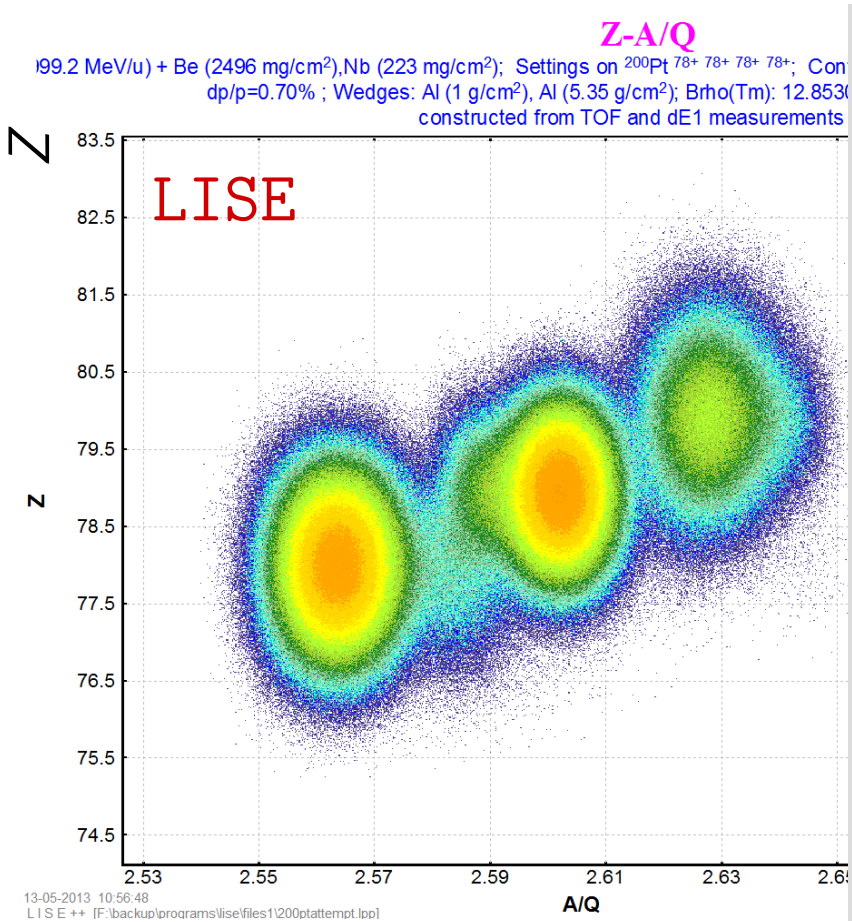
# What does LISE say? $^{200}$Pt settings



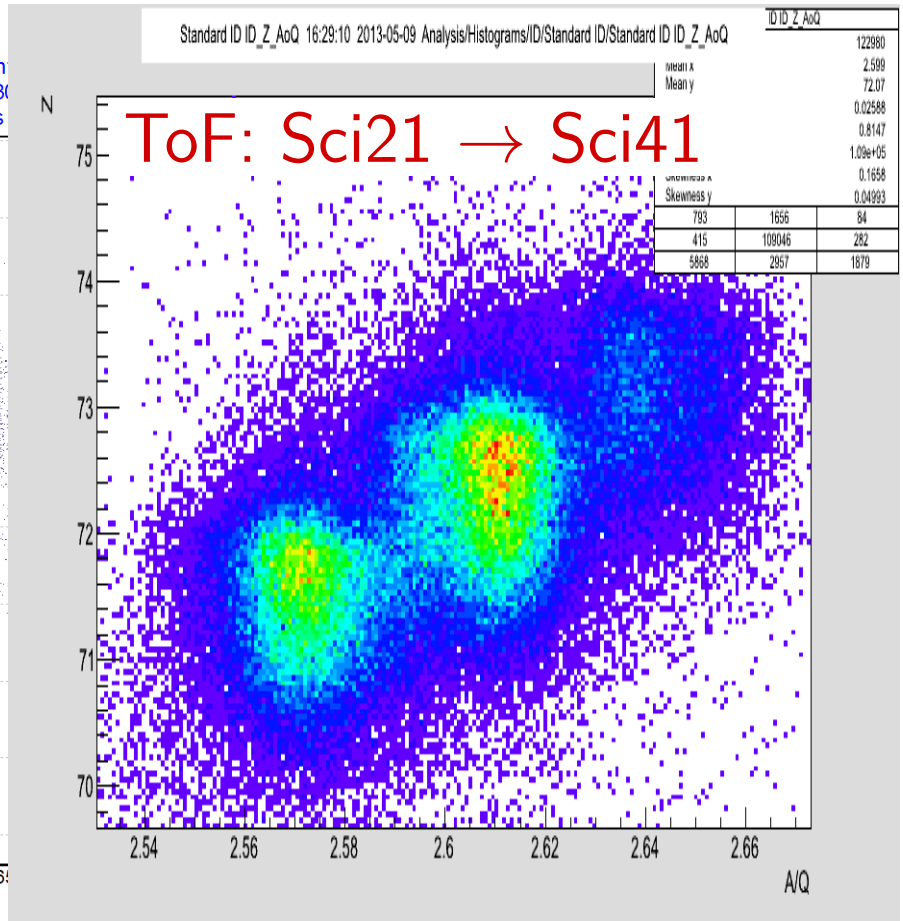

The optimization is based on the $^{200}$Pt settings since they are the most demanding.

[1] T. Alexander, priv. comm.

# FRS ID $^{200}$Pt settings




$A/Q$

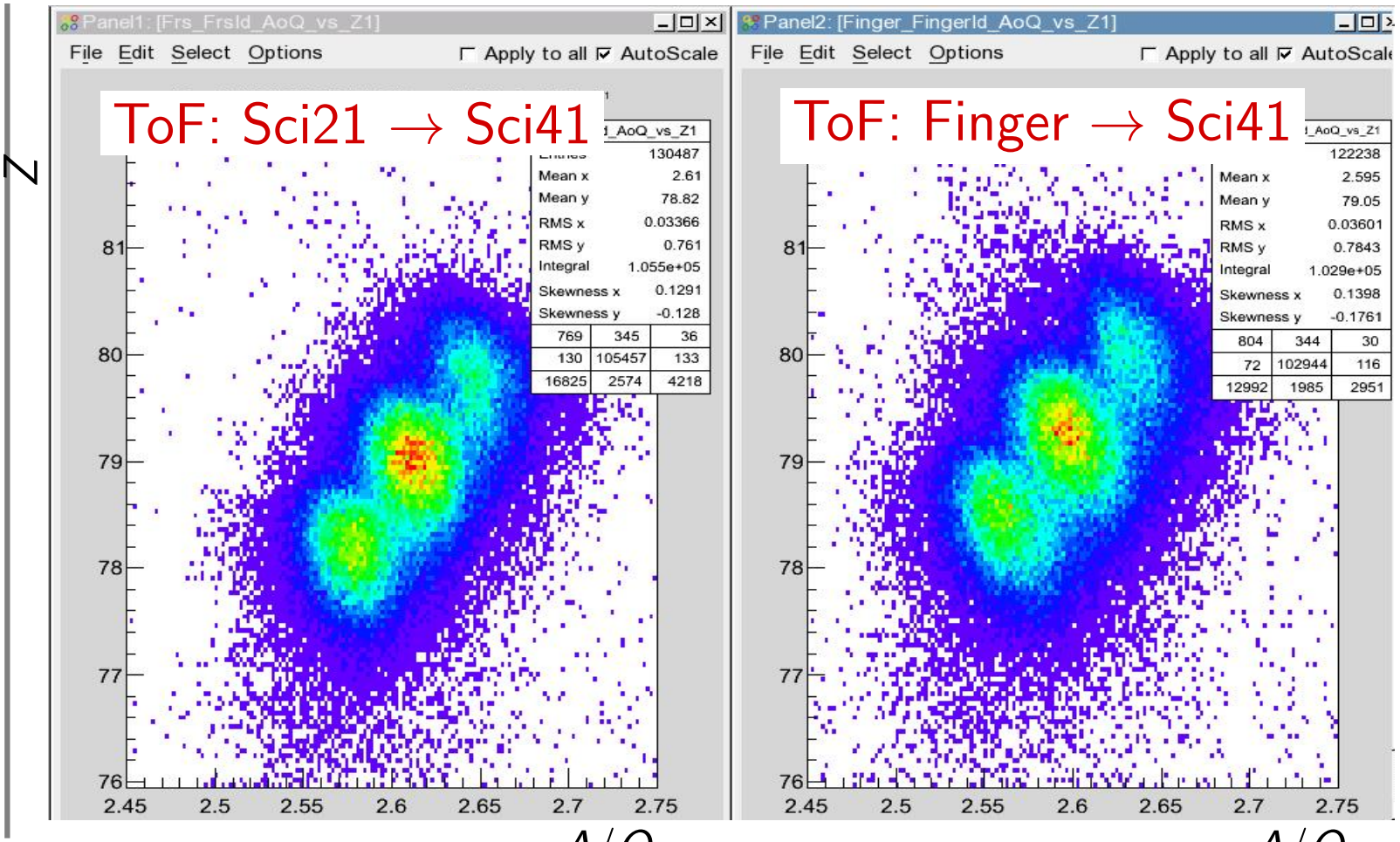



$A/Q$

The *blobs* are there but Z-AoQ identification is not the best option available.

[2] T. Alexander, priv. comm.

# FRS ID






We have found that the FINGER detector was not operating at its best conditions...

[3] M.L. Cortes, priv. comm

# FINGER detector

- During the S429 experiment unfortunately we have a very high multiplicity in the PMTs. Too often the multiplicity is 16/16 PMTs.
- We had two HV settings: one too low and another too high.
- The external clock of the corresponding mhTDC was set to a different frequency (62.5 ps/bin $\neq$ 25 ps/bin)

[4] 15 strips, $13 \times 80 \times 1\,\mathrm{mm}^3$. F.Ameil (GSI), M. Danchev (Sofia University).

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We are investigating the possibility to use the FINGER as a *Membrane*.

4

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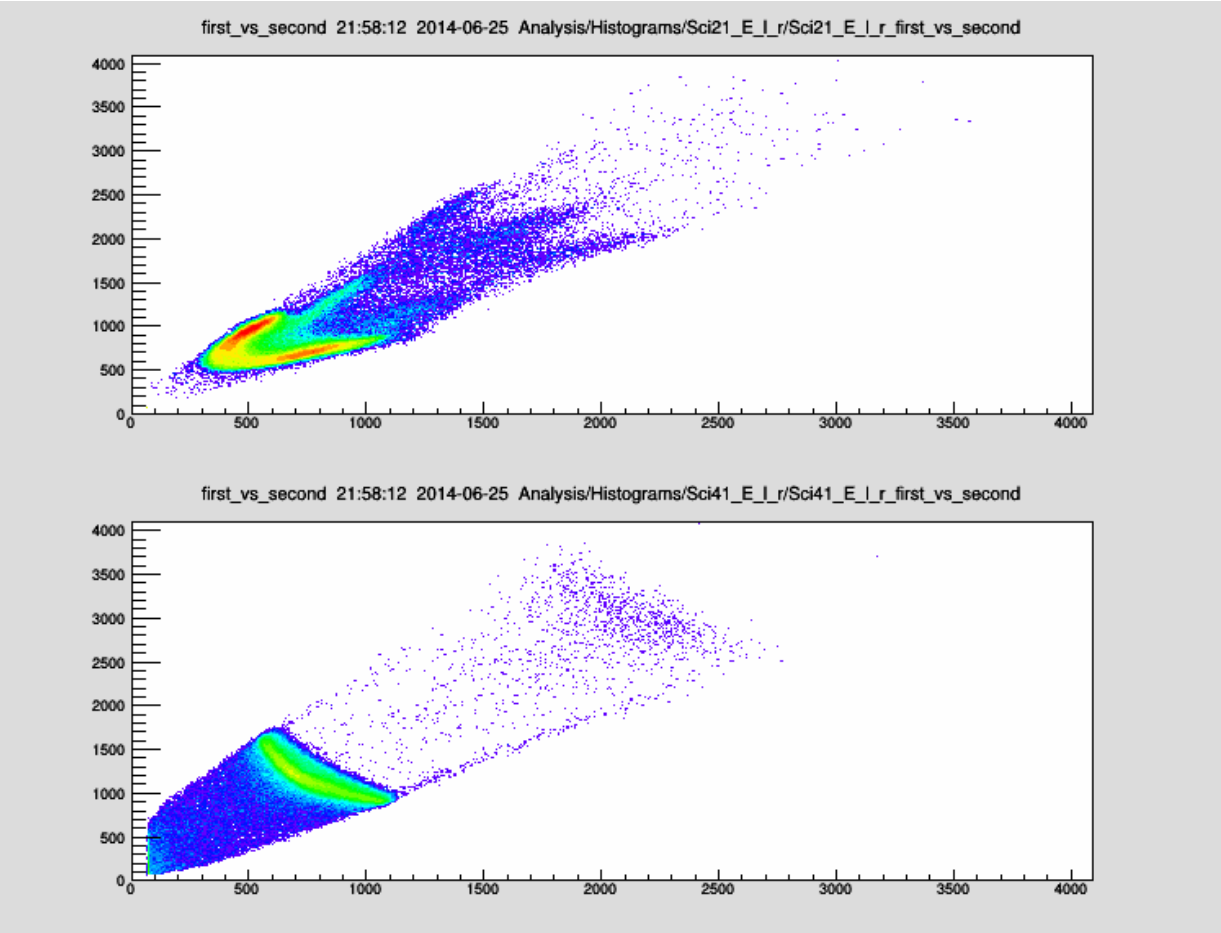
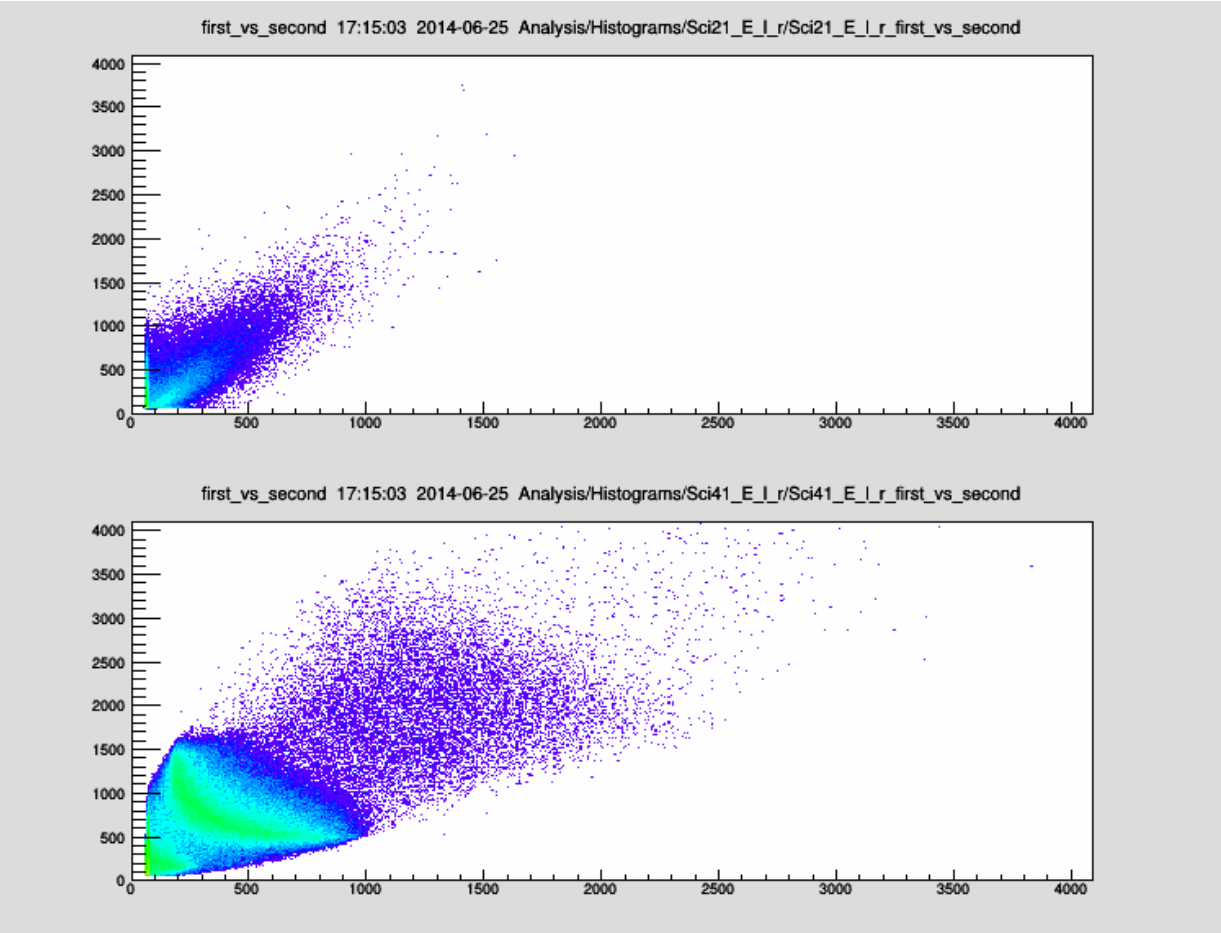
# Sci21 & Sci41 (Begin)



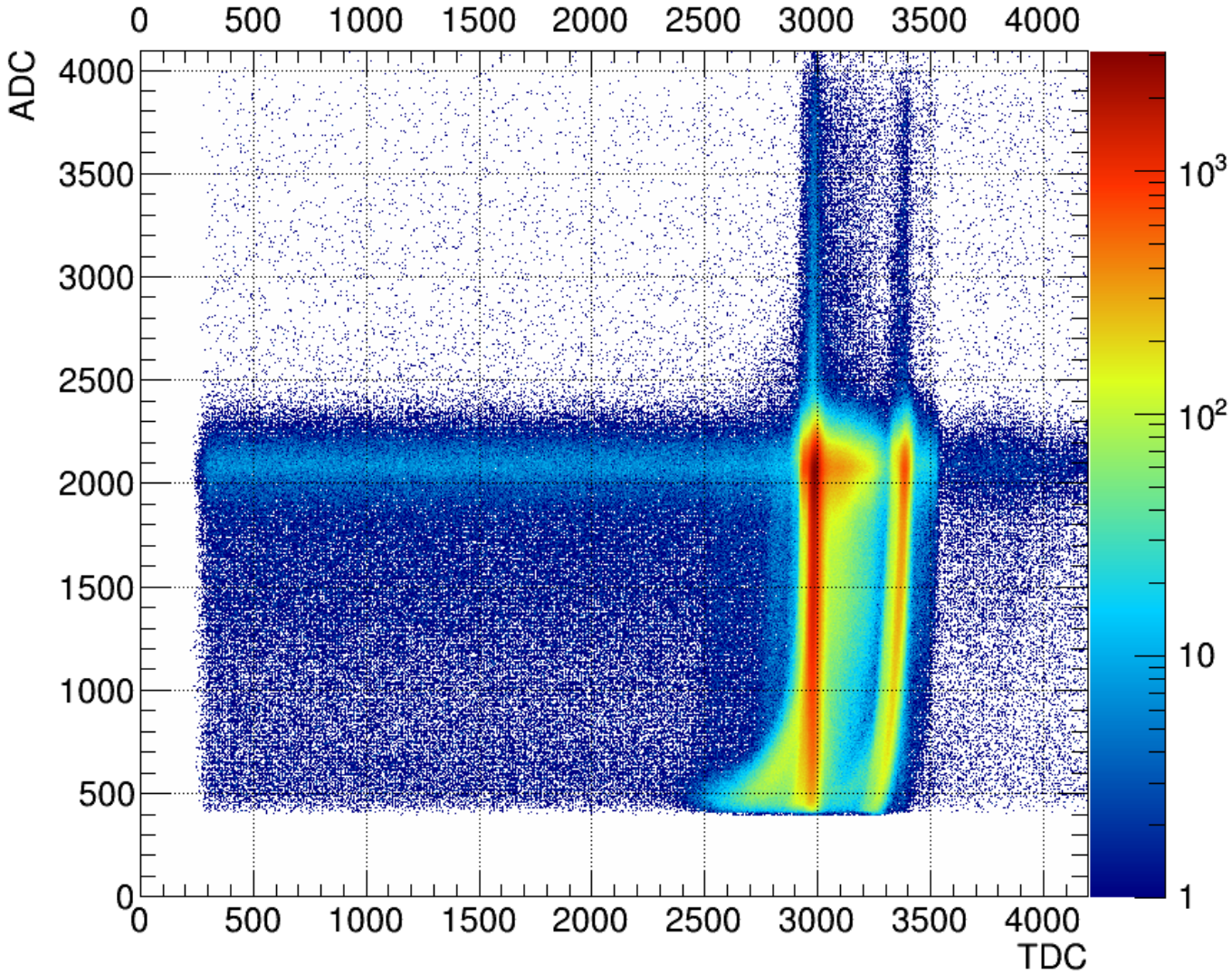

Sci21(top) and Sci41(bottom) $E_\ell$ vs. $E_r$ for two $^{206}$Pb runs. Roughly *half* of the events in the end do not have a valid Sci21→Sci41 ToF info.

# Sci21 & Sci41 (End)




Sci21(top) and Sci41(bottom) $E_\ell$ vs. $E_r$ for two $^{206}$Pb runs. Roughly *half* of the events in the end do not have a valid Sci21→Sci41 ToF info.

# The target DSSSD affair




This only occurs
for the Coulex runs

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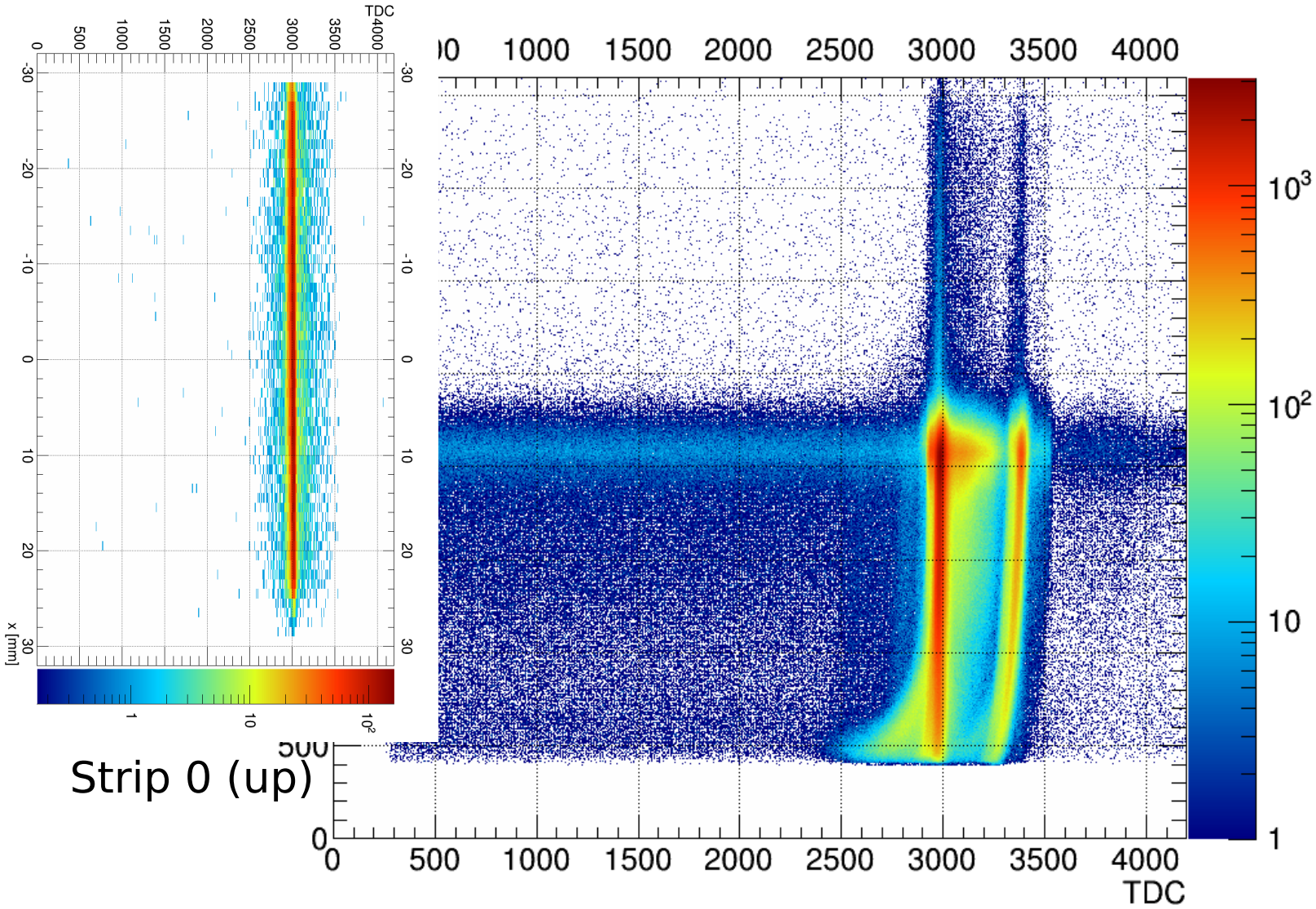


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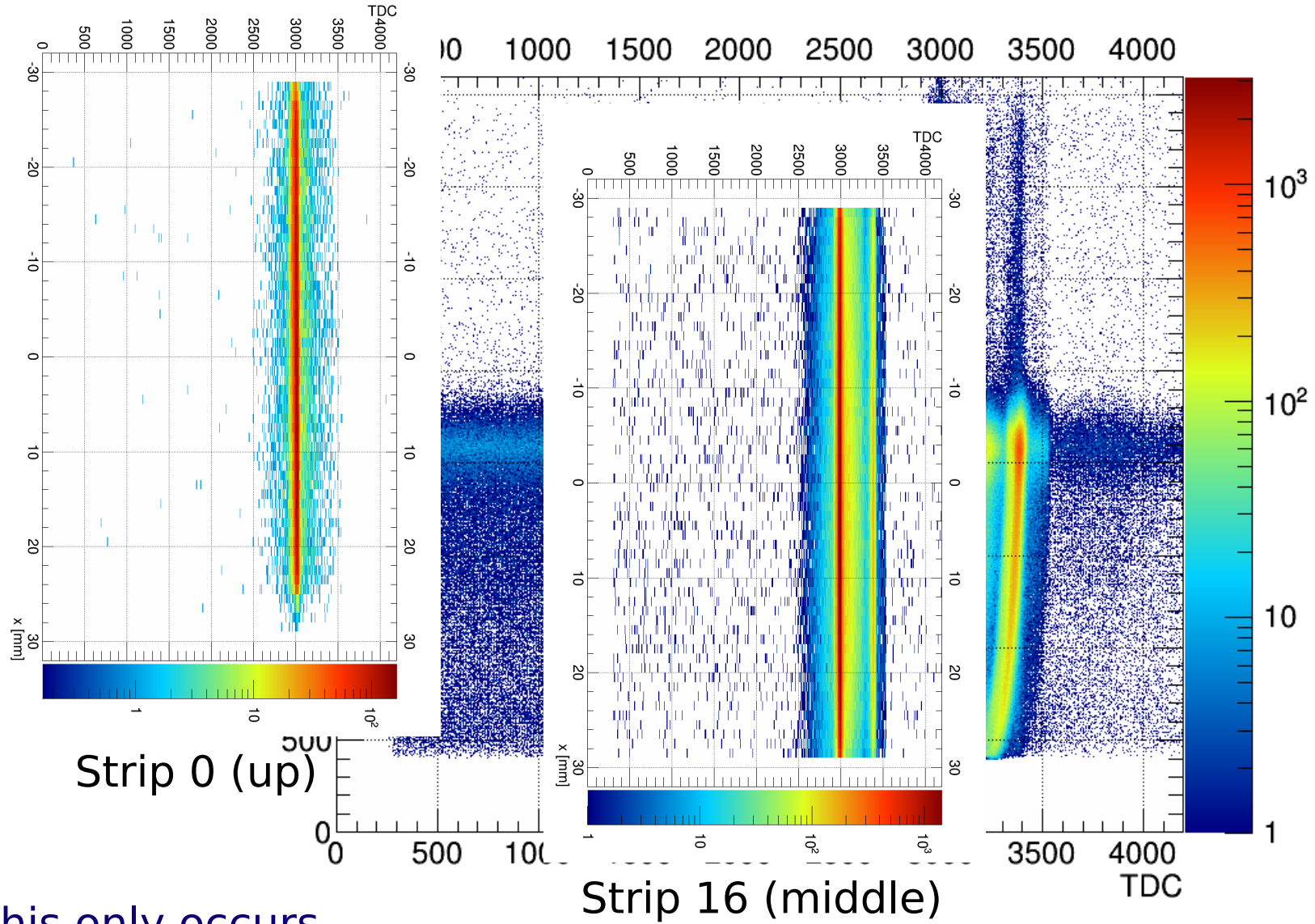


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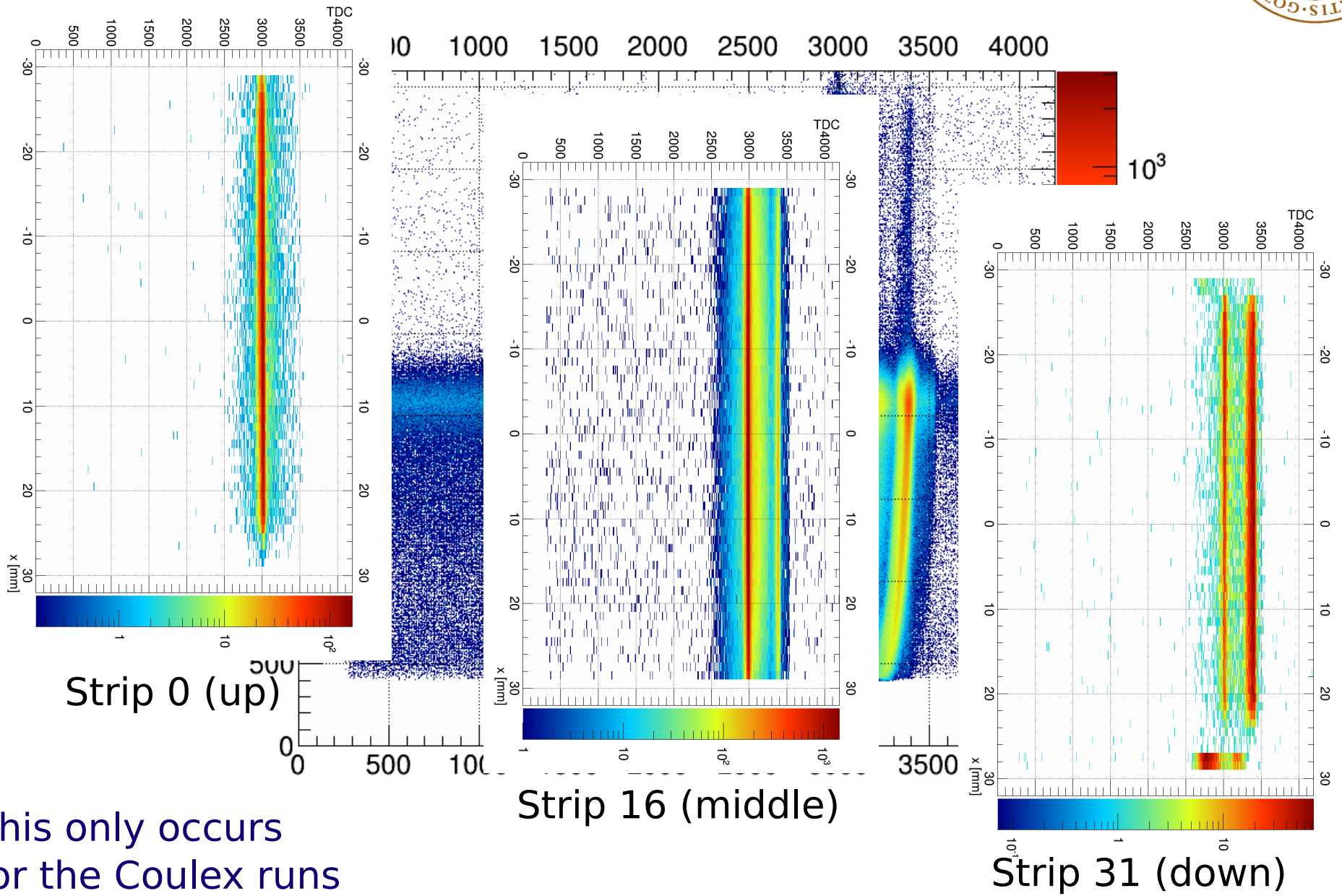


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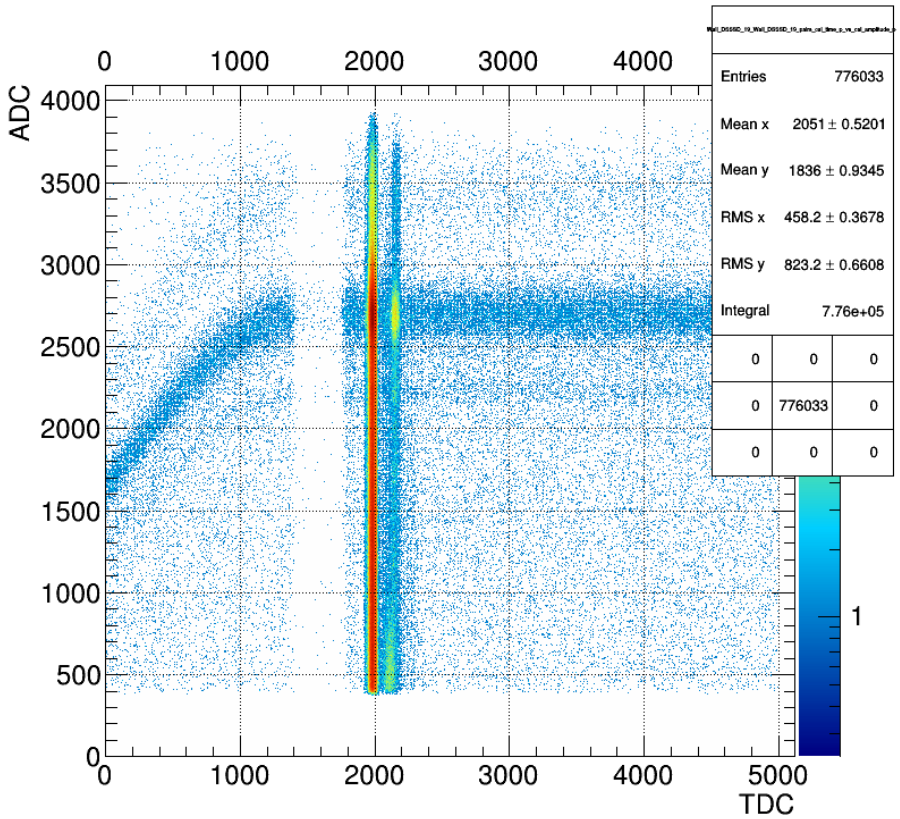
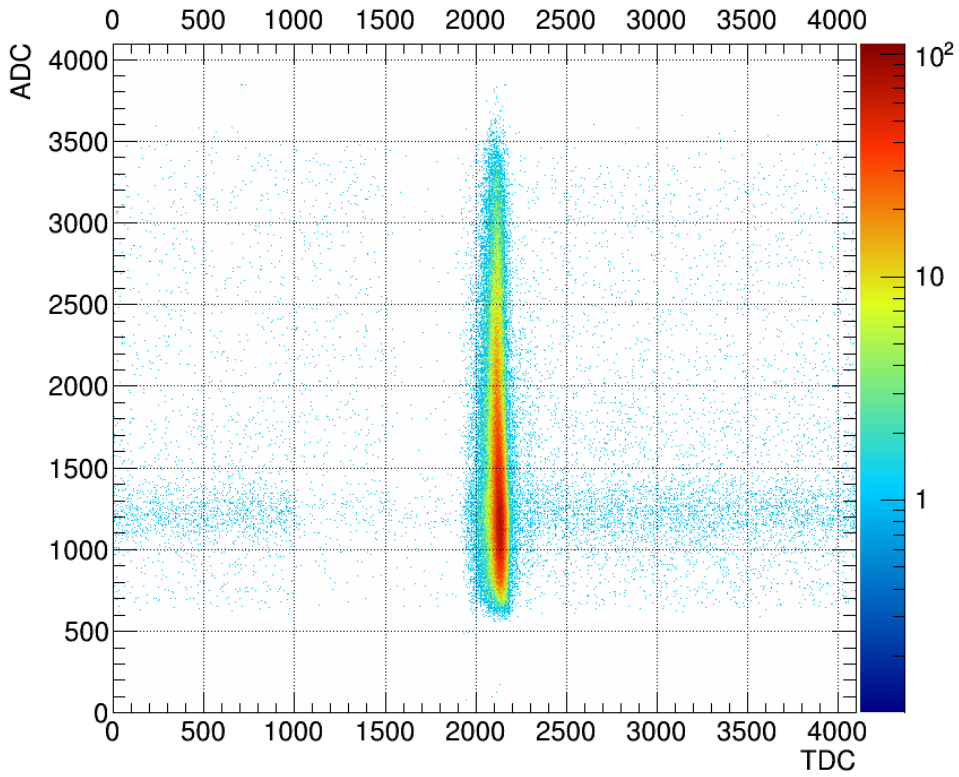



Wall DSSSD (lower part)



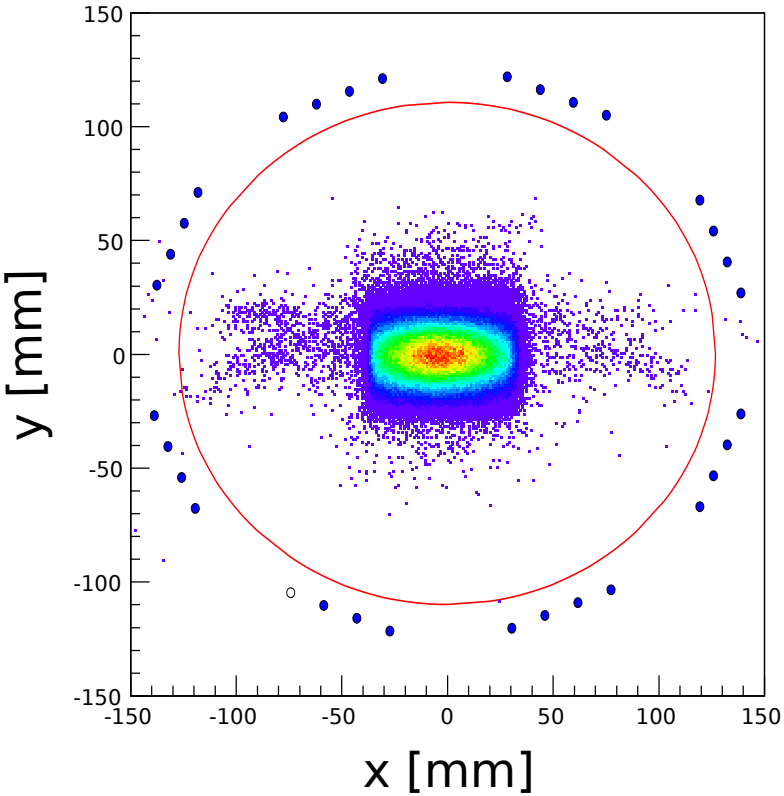

Wall CsI (upper part)

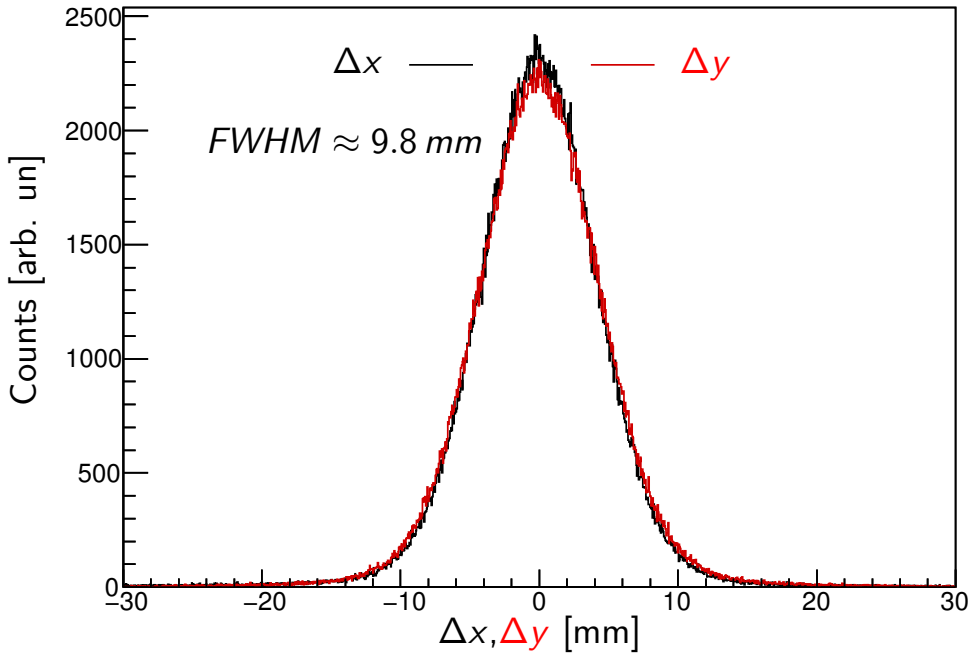
Given the conditions at which this happens this effect is likely due to the different shapers used in the upper and lower part of LYCCCA.

The different CFD or LE time info can interfere in the particle-gamma time of the experiment

... enough complaining ...

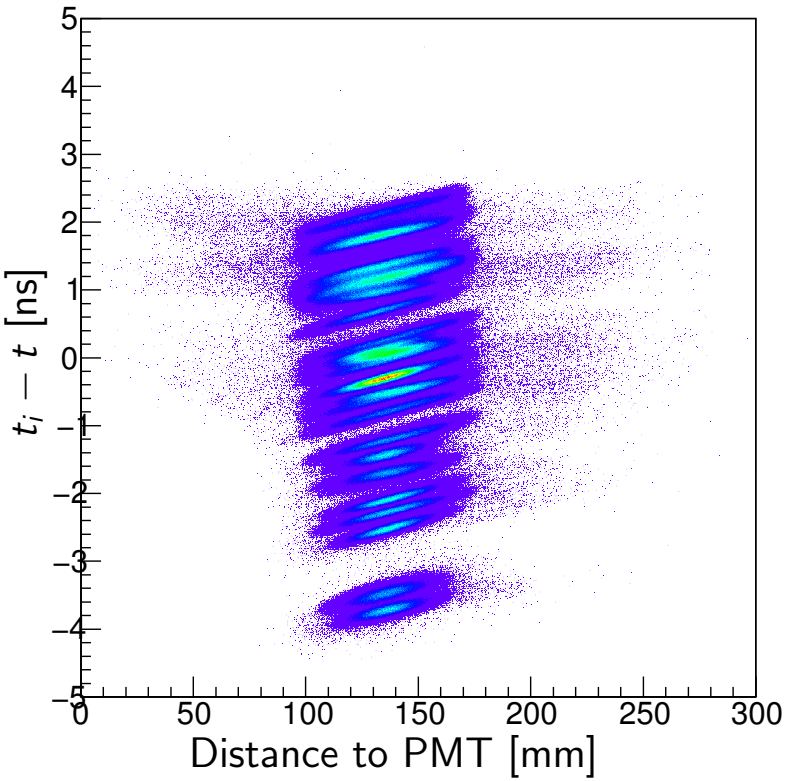
# Tracking position resolution




Tracking position compared to measured position with target DSSSD.

# ToF start position correction




PMT are clearly *misaligned*

Ideally they should be aligned at zero.

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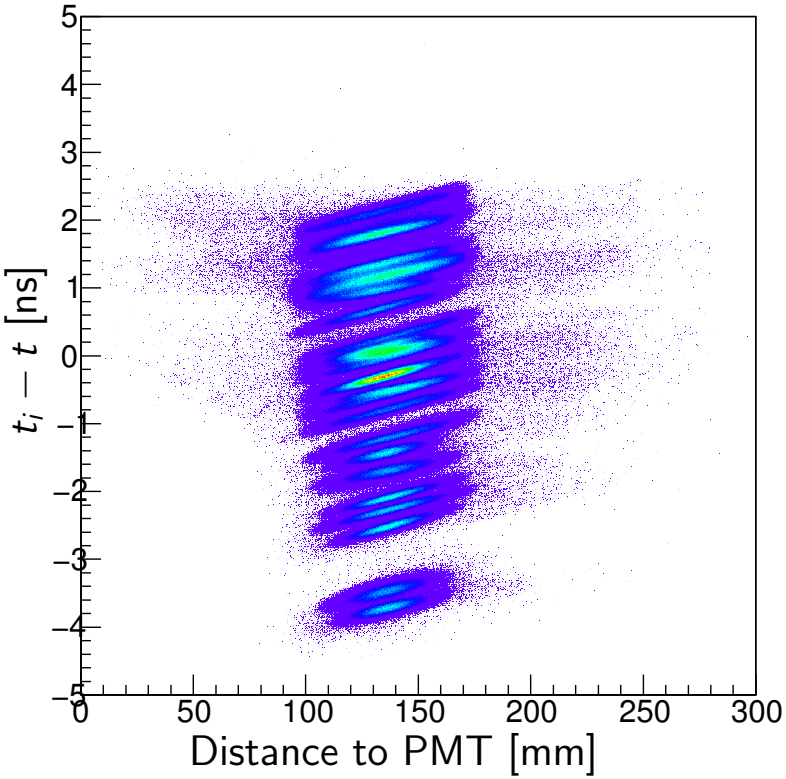


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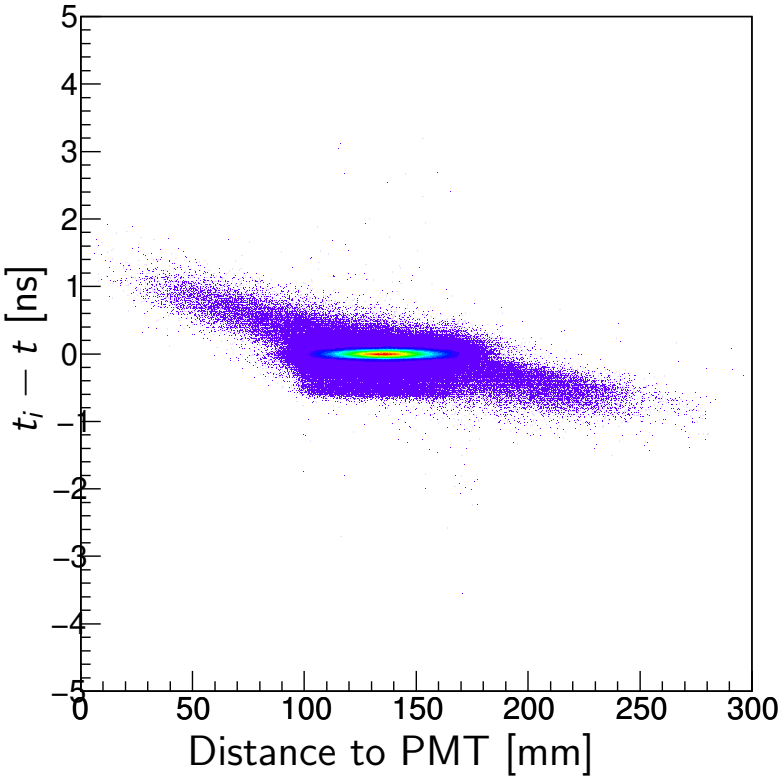


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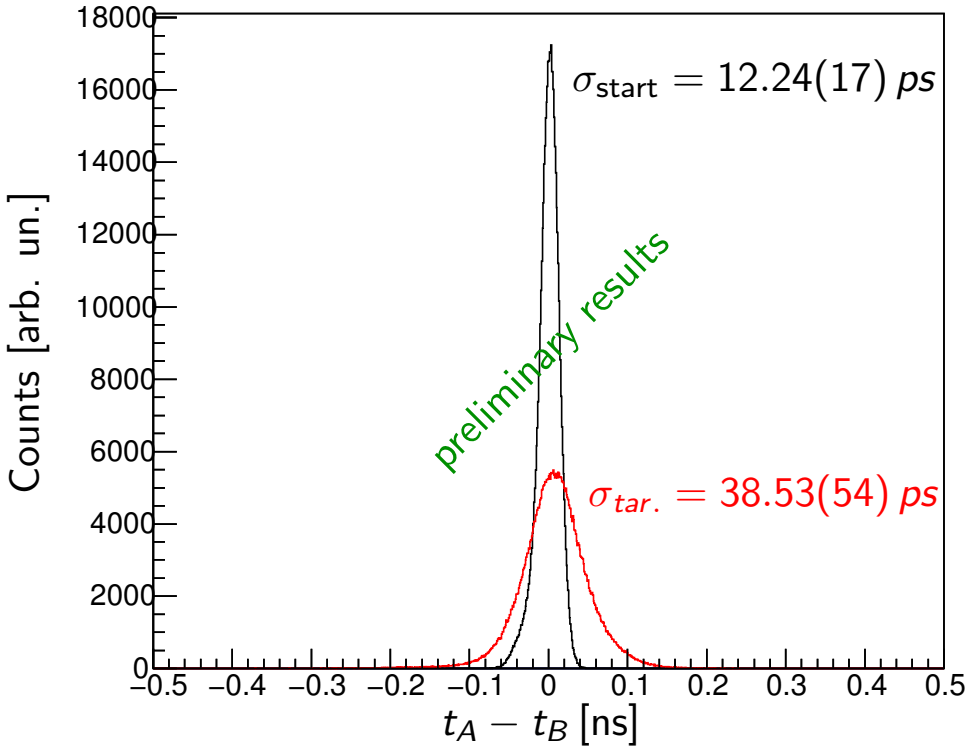
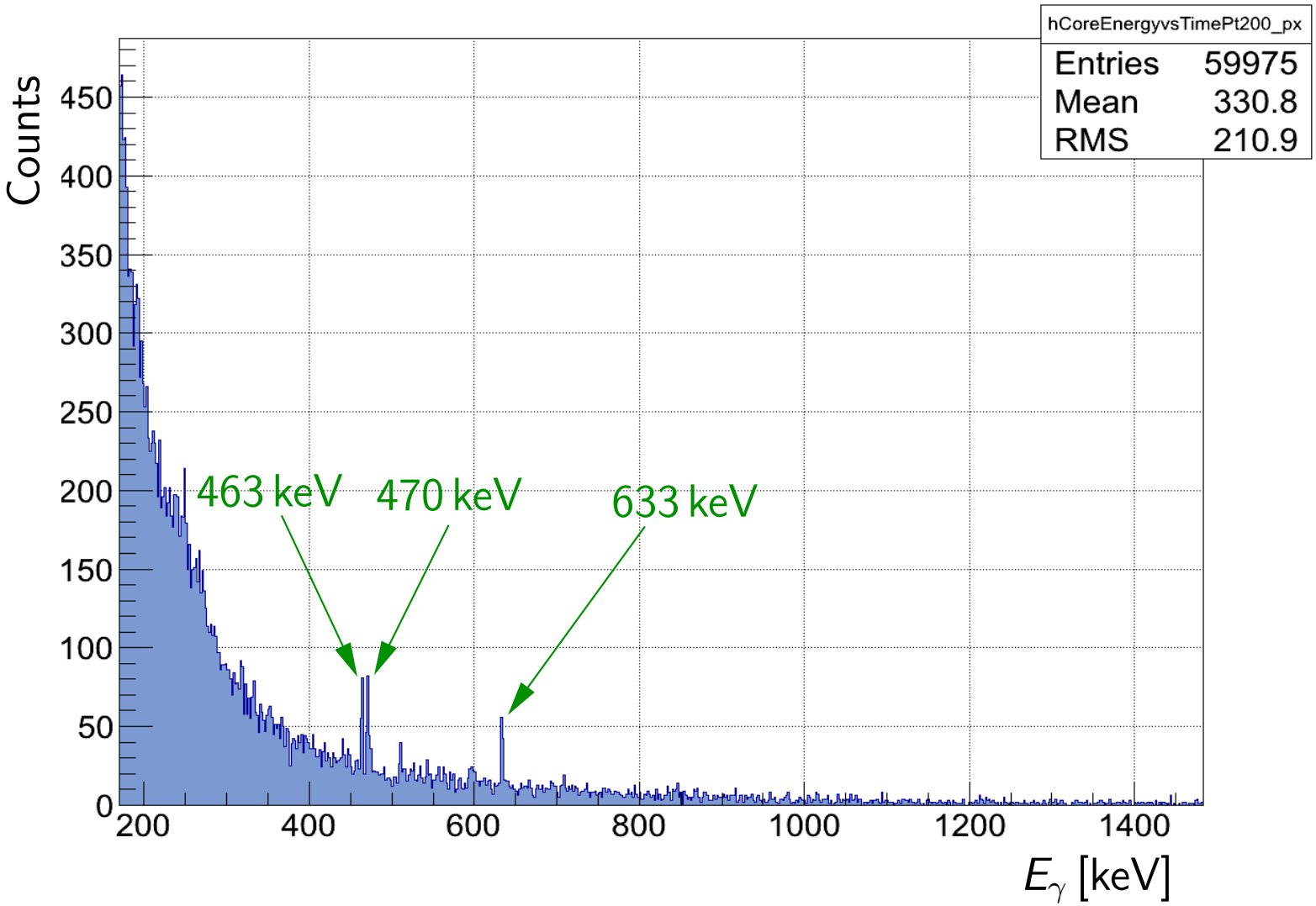
# ToF intrinsic resolution




- Being A and B the odd and even numbered PMTs.
- This is already a good indicator of the intrinsic resolution.
- To assess something concrete, proper weighting values for each time measurement need to be found.

# $^{200}$Pt isomeric state



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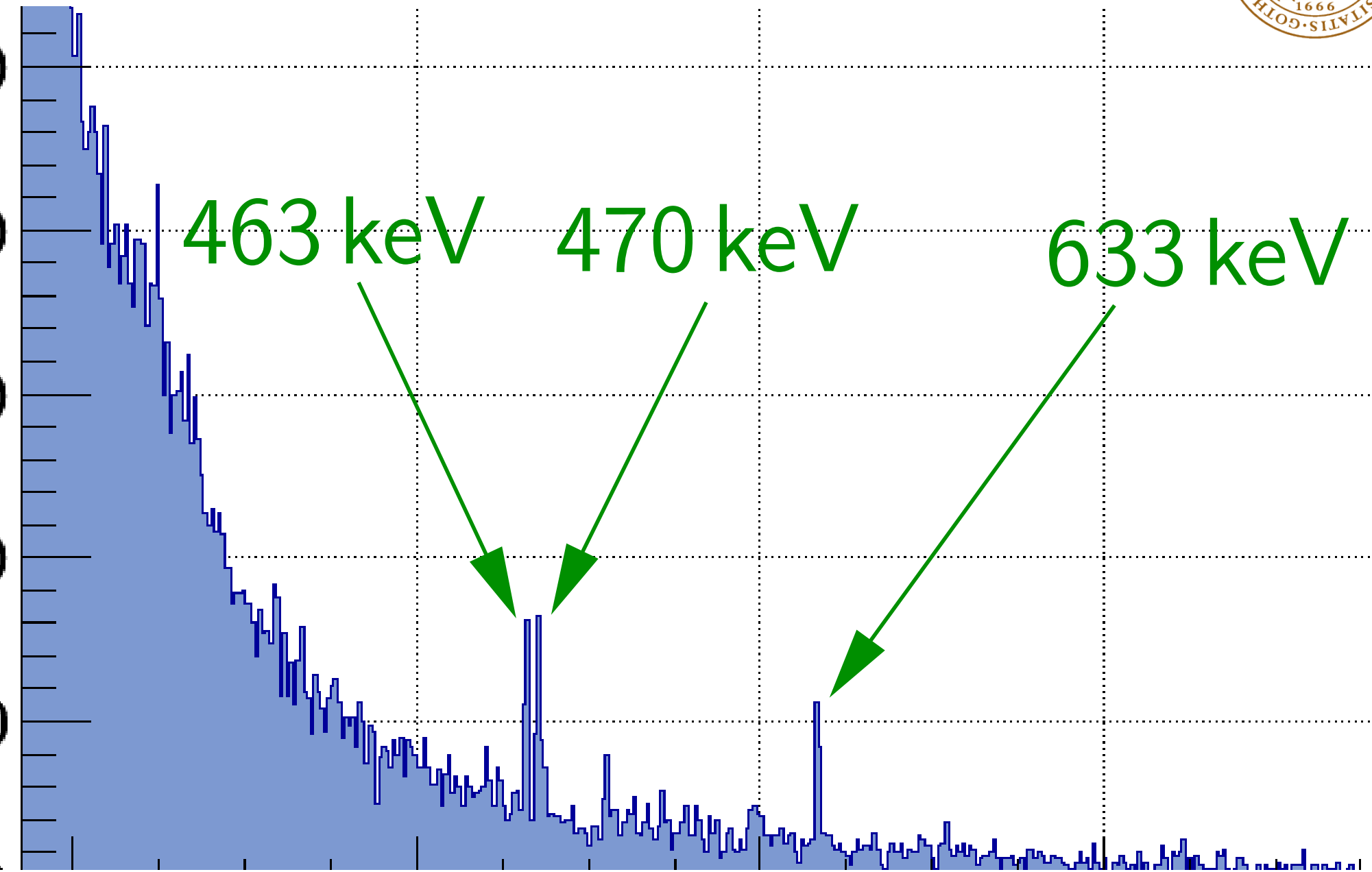
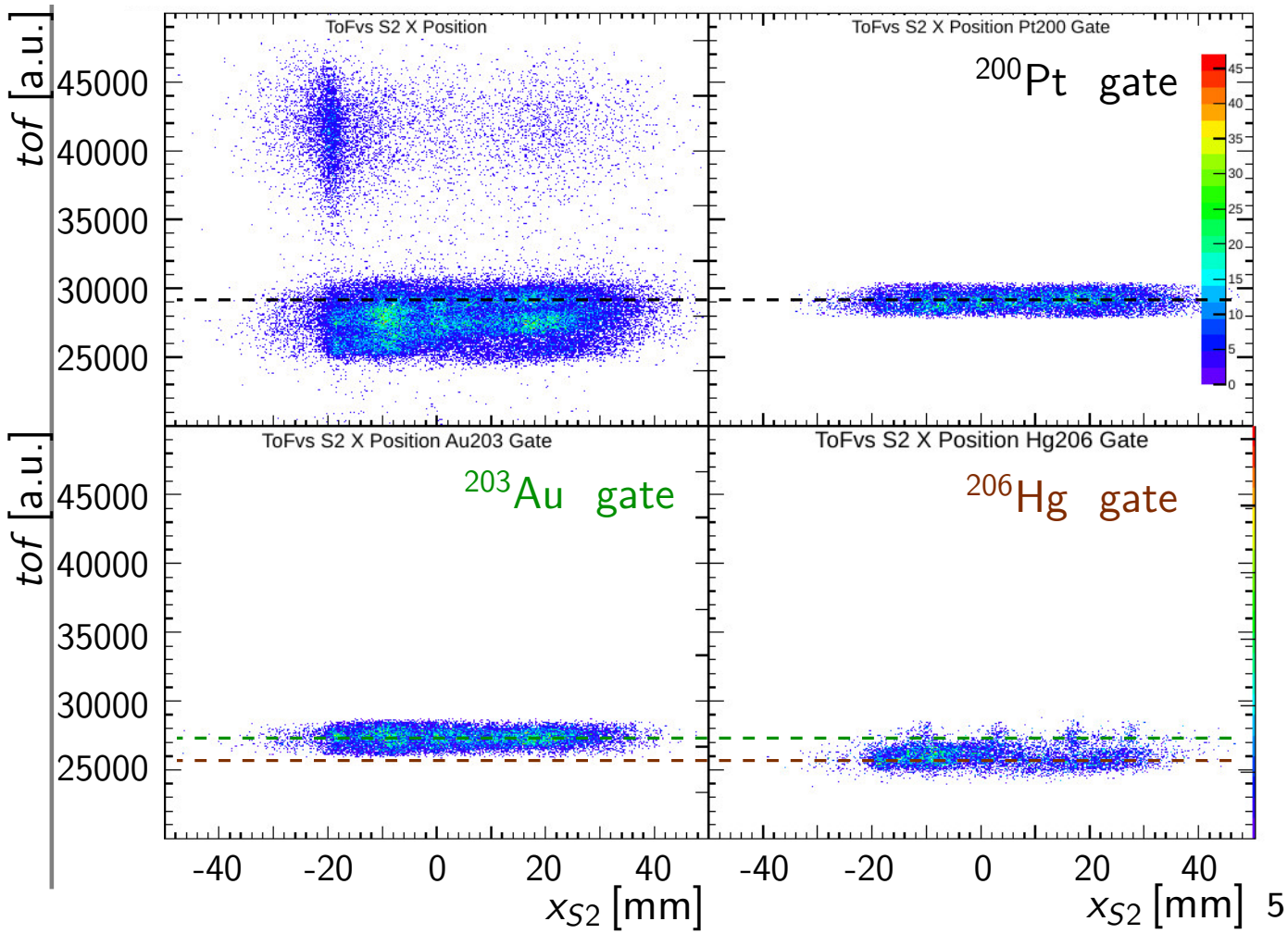


# Testing possibilities

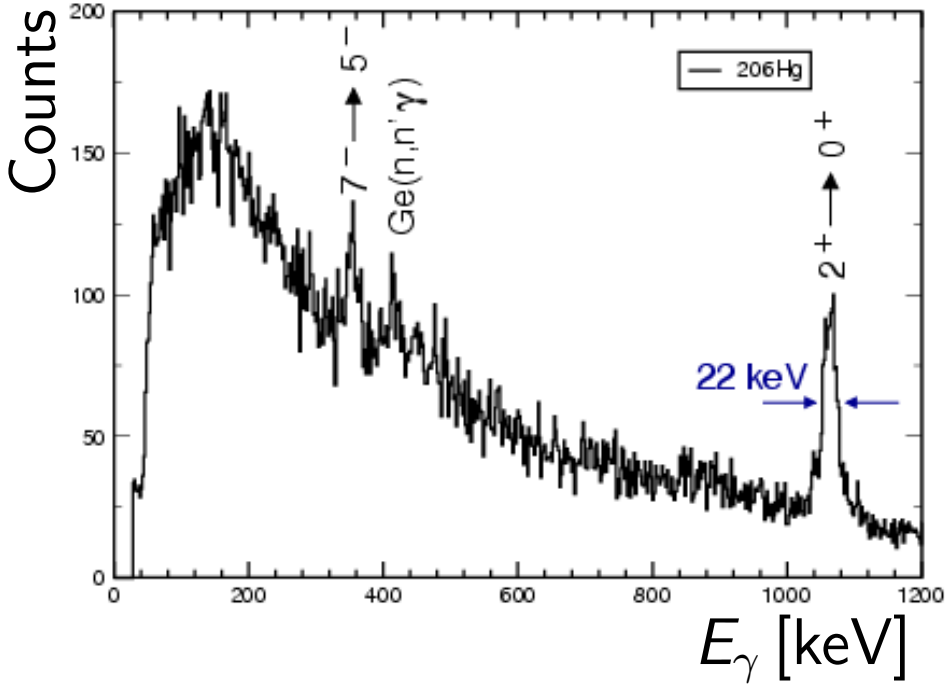



[Too] many possibilities for selection/analysis of the secondary beam!!
ToF vs $x_{S2}$ position seems like a viable alternative ...

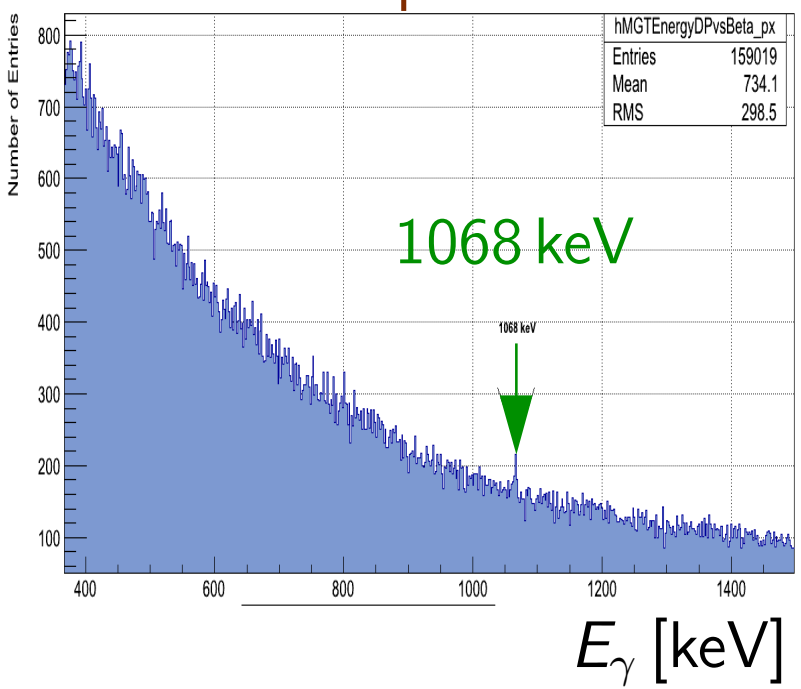
[5] T. Alexander, priv. comm.

# Preliminary results ( $^{206}$Hg )

## Simulation




## Experiment

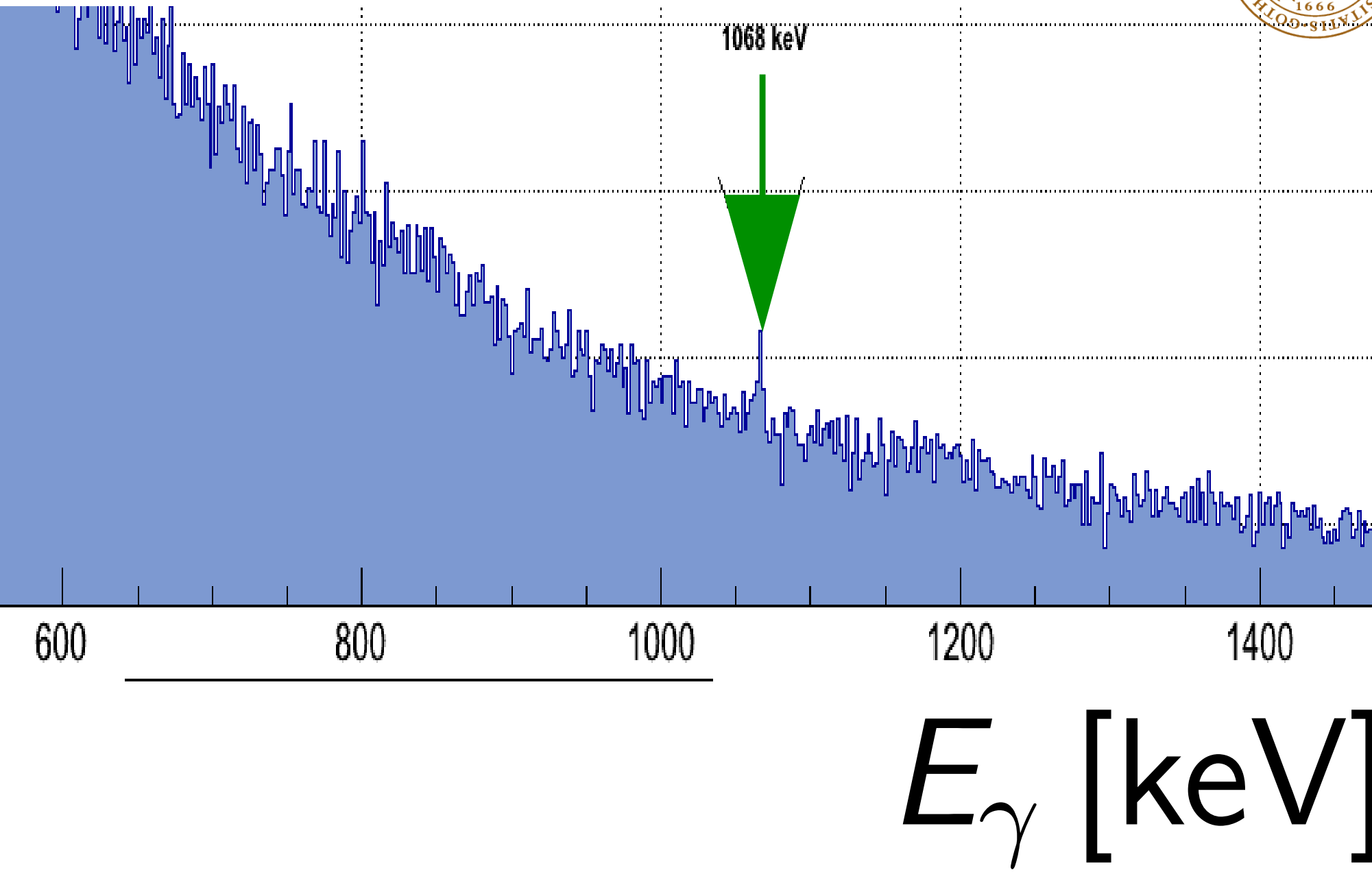




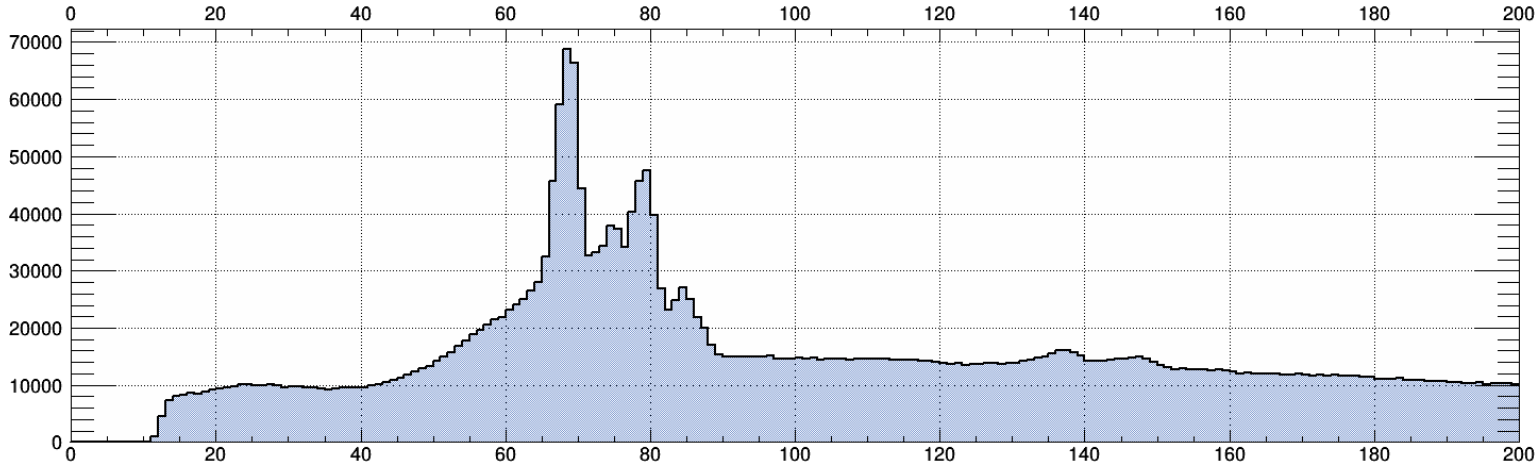

The expected Coulomb excitation peak *seems to be there* for the isotope with lowest cross-section. However more work needs to be done to enhance its peak-to-background ratio.

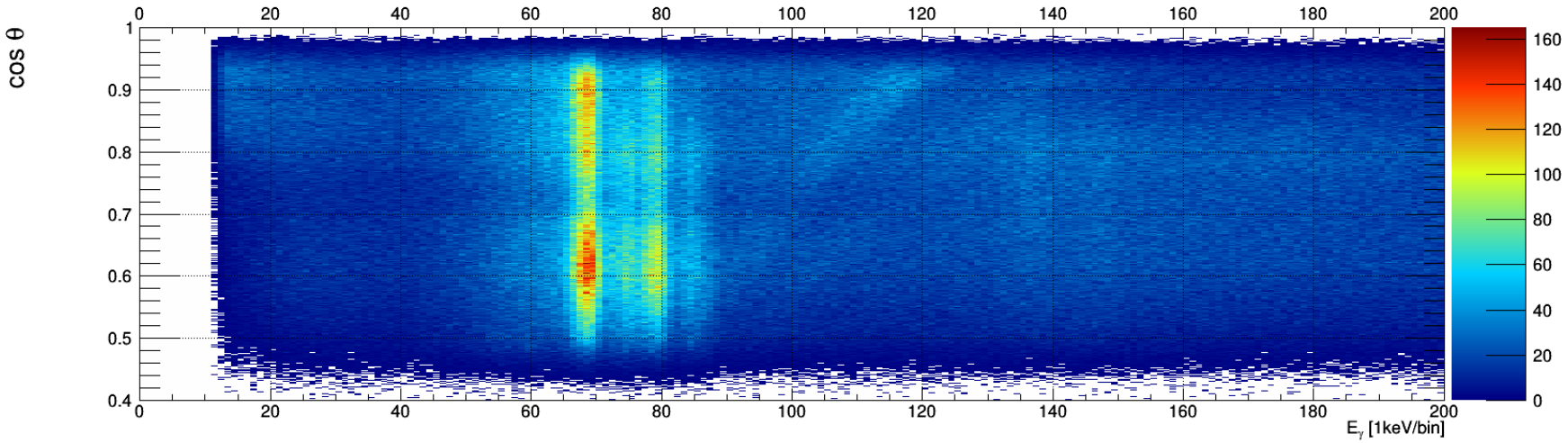
[6] M. Reese, T. Alexander, priv. comm.

# Preliminary results ( $^{206}$Hg )



# X rays (Core)




The x rays optimization would lead the way to the optimizations.

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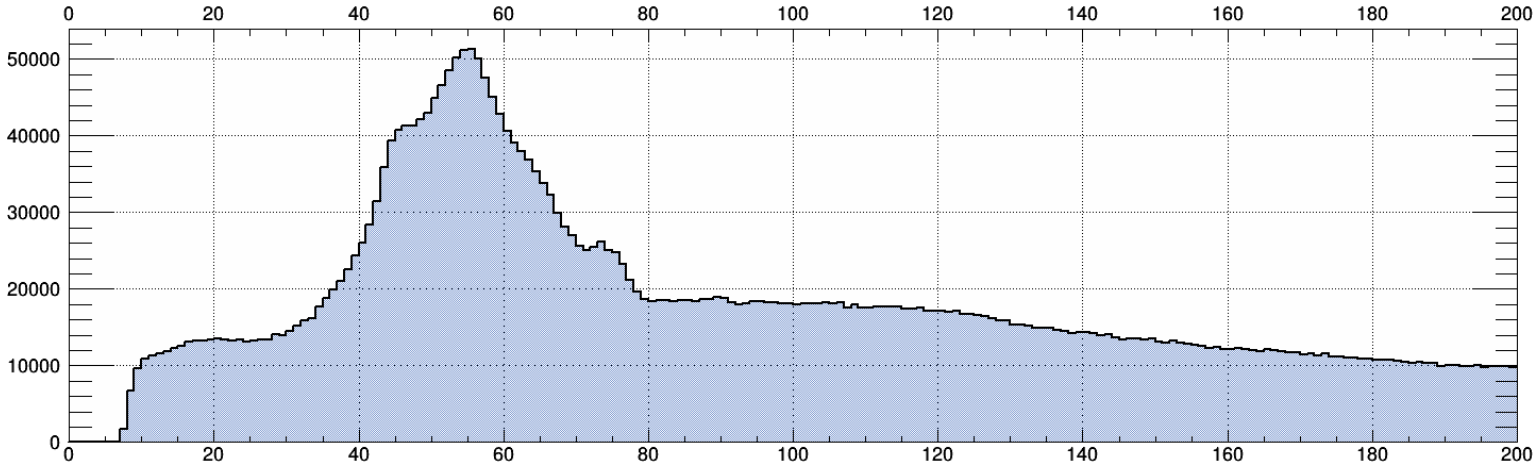


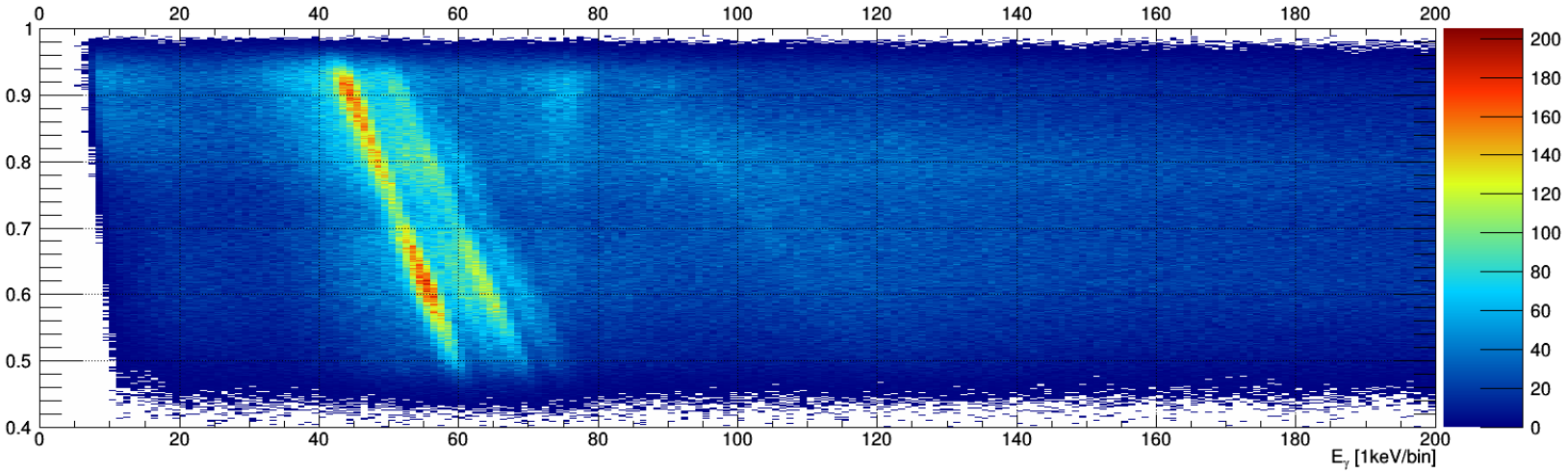


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# What's next?

- Liliana, Tom and myself worked together recently in Lund for some weeks.
- Now we have a better understanding/control of the different components of the experiment.
- ... keep working hard

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- The path of optimization of the x-ray detection would allow us to learn how to deal with the velocity spread for the Coulex data.
- Try to reduce the background by finding *the* gate(s).
- Perhaps we need to keep an eye on the empty target runs.
- then and only then, find the peak(!)

# THANK YOU
## for your attention