C. Jesús-Valls
cjesus@ifae.es

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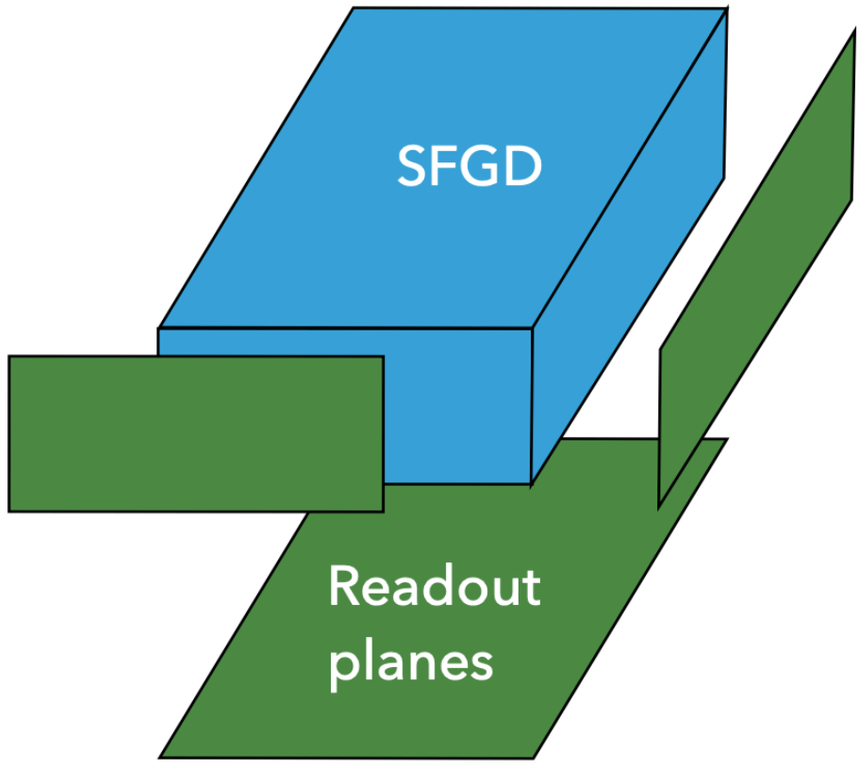
# Group Meeting

## SFGD prototype reconstruction progress and some comments about TPC beam test

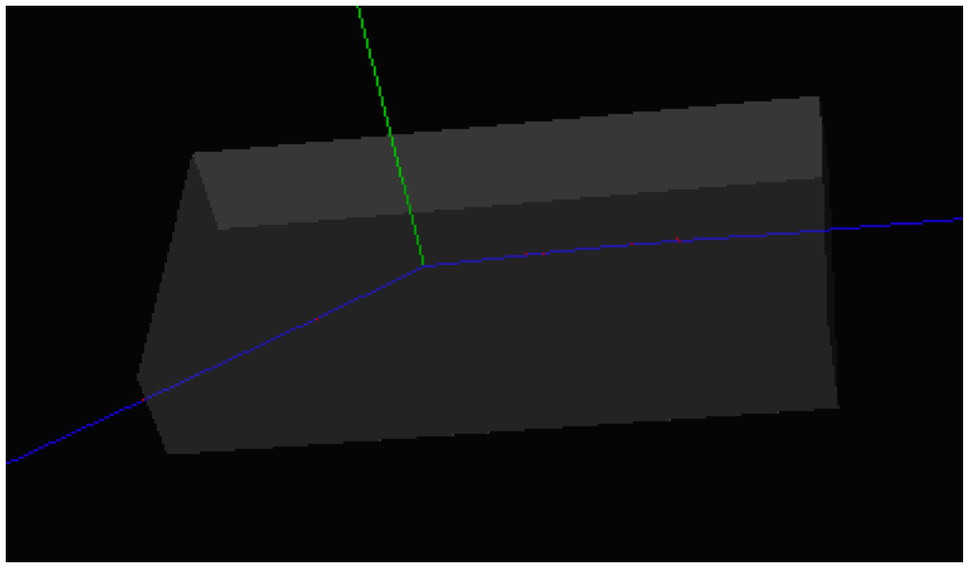
## SFGD

- Last WS: 3D reconstruction from 2D MPPC hits.
    - We learnt a lot about the problems that could make the 3D reconstruction difficult.
- We need some MC inputs to develop algorithms using true info vs reconstructed info.
- As presented in the last group meeting it is necessary to have both as input for Sebastian's studies.



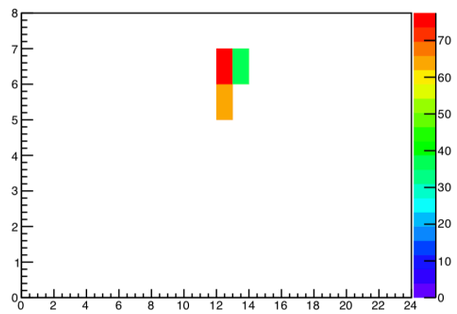

## TPC TB

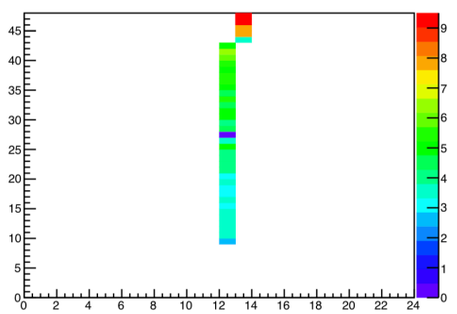
- Looking forward to have final studies soon. There are still some issues to solve.

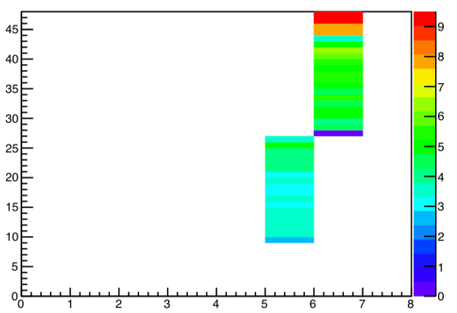


- Started to work on a 24x8x48 cubes prototype in SFGD

- I had last weeks some events and plotted them in projections. **Without detector effects!**







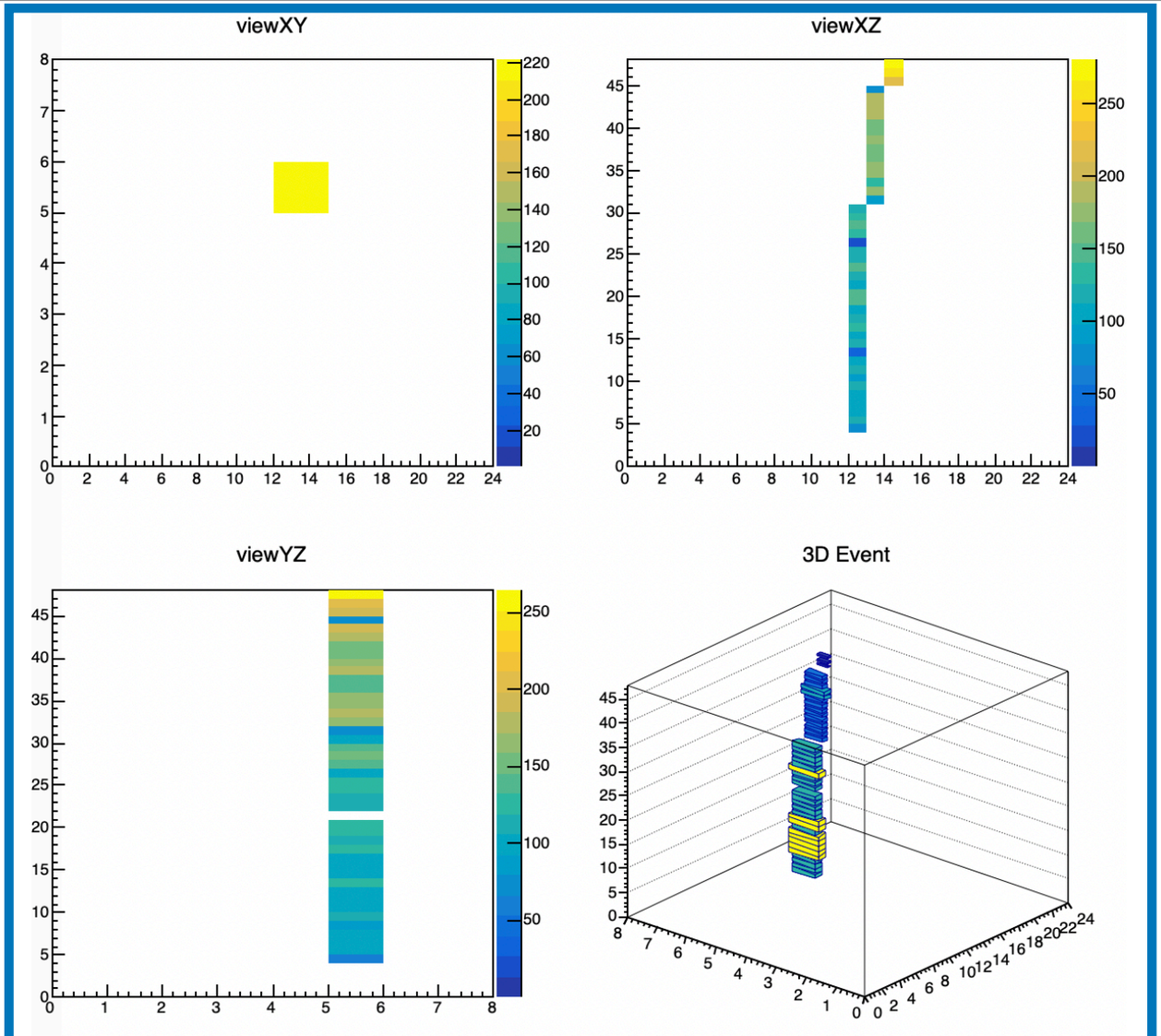
**Recent progress:**

- L.Y studies included. Now we have #p.e.
- Event and Hit classes developed for the SFGD TB data storage have been included in the T2K-ND280Up software.
- Successfully stored data from MC in the same structure than real data.
- Merging hits in different projections implemented.

**A bunch of easy to develop ideas:**

- Think how to store **true** information (and implement it).
- Look to distribution of time in each projection in real data and apply it to MC. (some random conditions option?)
- Apply crosstalk.
- Check 2D to 3D algorithm with true information.

# PRESENT AND FUTURE

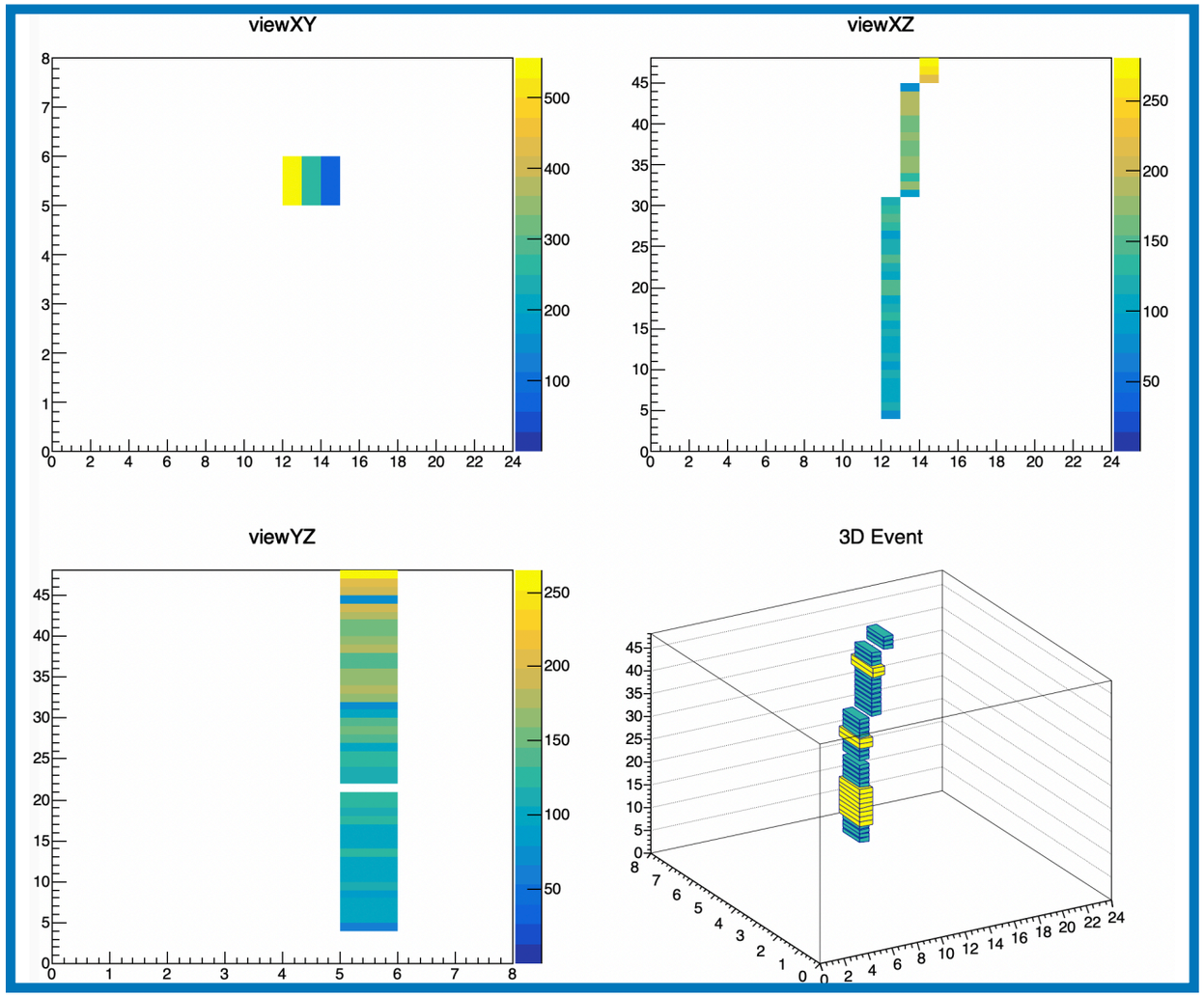



Taking advantage of the test beam prior knowledge on the beam directionality.

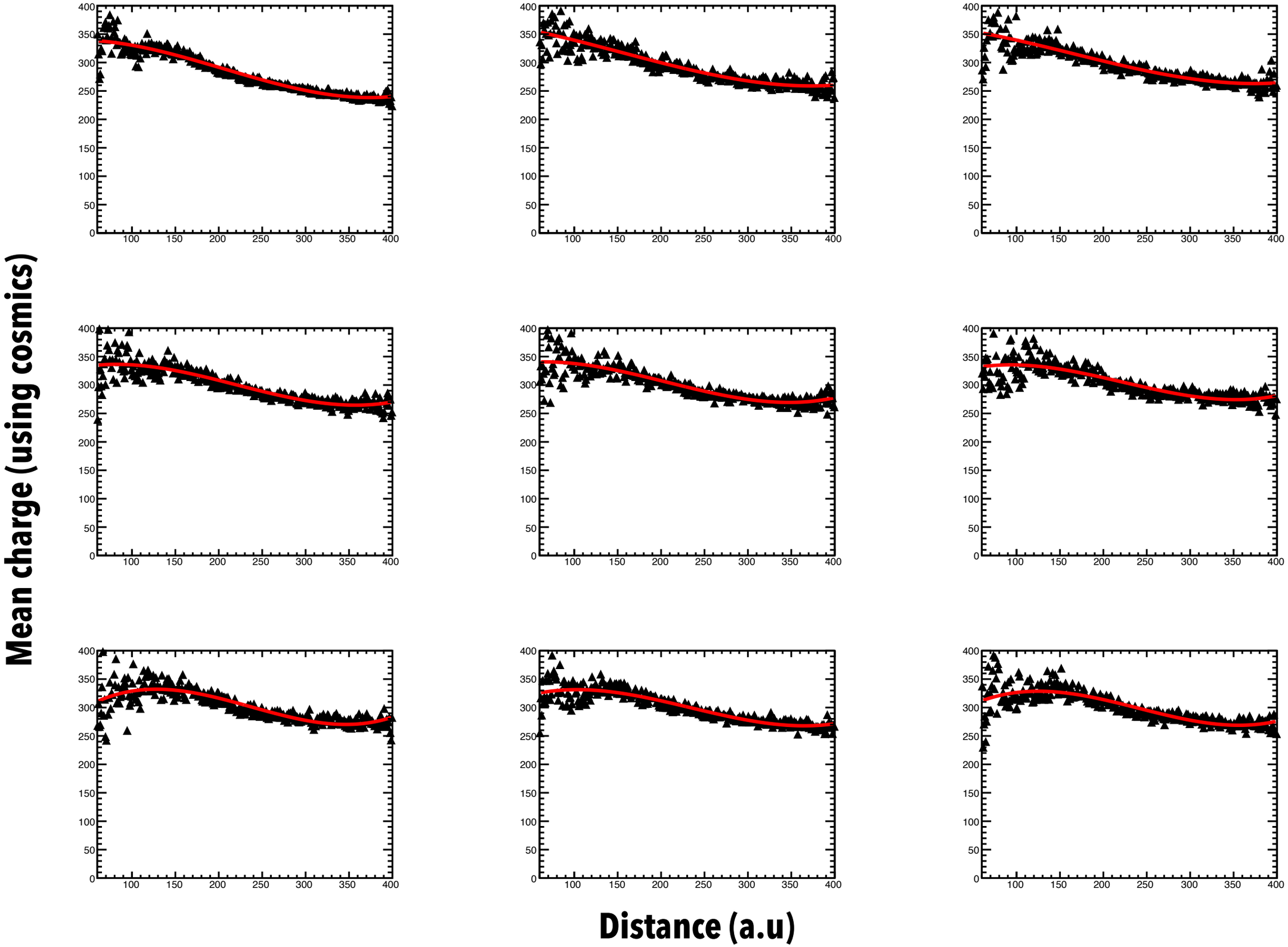
Numerical condition?

Merging all hits in viewXY! (to do reduce the combinatorics)

While merging… true information is 'lost'… in a similar way that happens in real detector what to store?

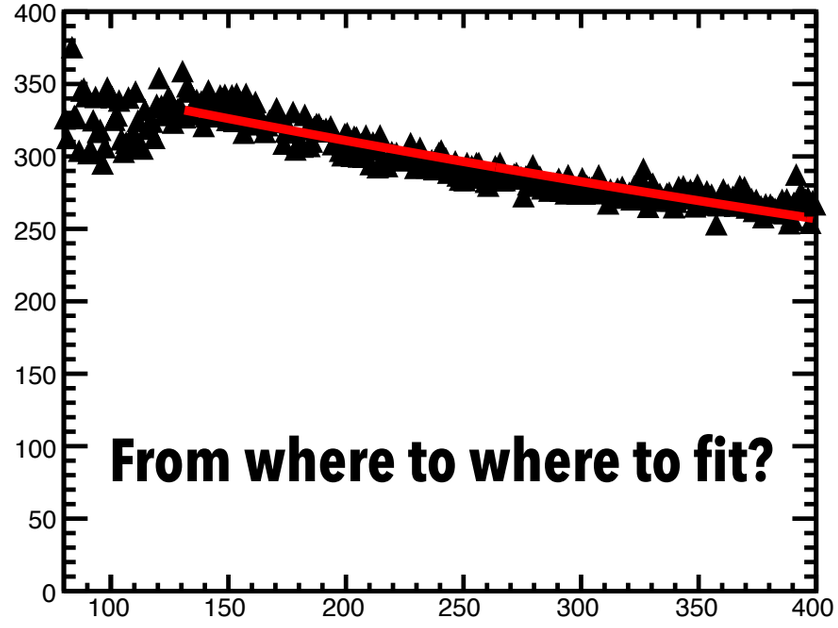


# CORRECTION FACTORS



## ATTENUATION CORRECTION

| | Att Coef | Coef Err | CorrFactor |
|---|---|---|---|
| Pr1 | 466,8 | 45,78 | 1,203 |
| Pr2 | 465,4 | 45,78 | 1,079 |
| Pr3 | 468,5 | 48,43 | 1,032 |
| Ele1 | 434,1 | 39,73 | 1,220 |
| Ele2 | 506,4 | 55,32 | 1,072 |
| Ele3 | 477,4 | 52,40 | 1,031 |
| Pi1 | 337,3 | 25,21 | 1,291 |
| Pi2 | 505,1 | 54,27 | 1,072 |
| Pi3 | 505,1 | 49,67 | 1,029 |

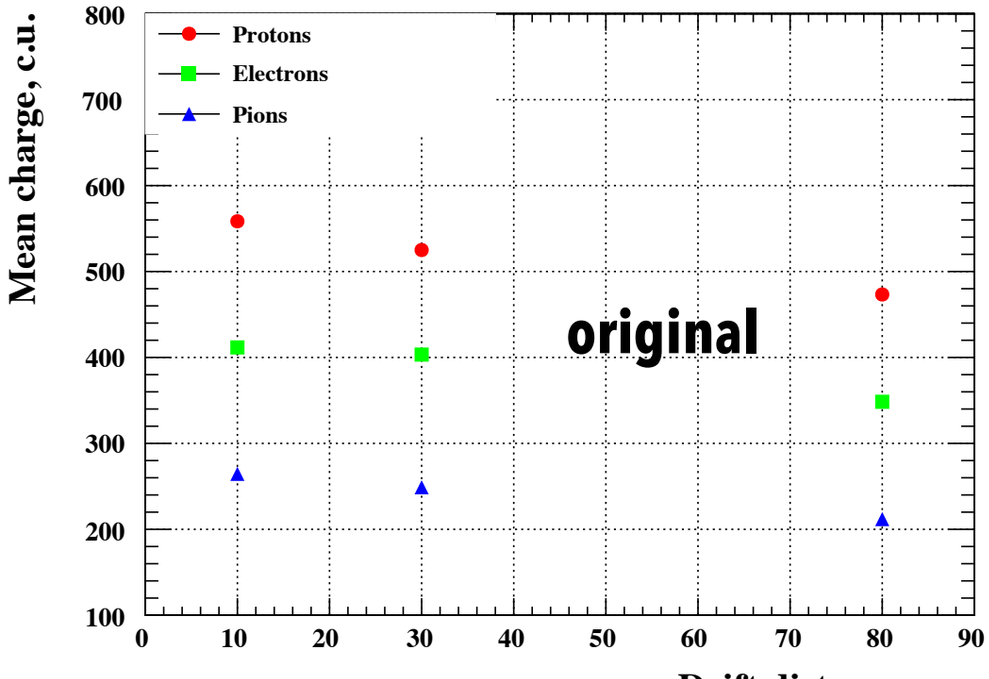


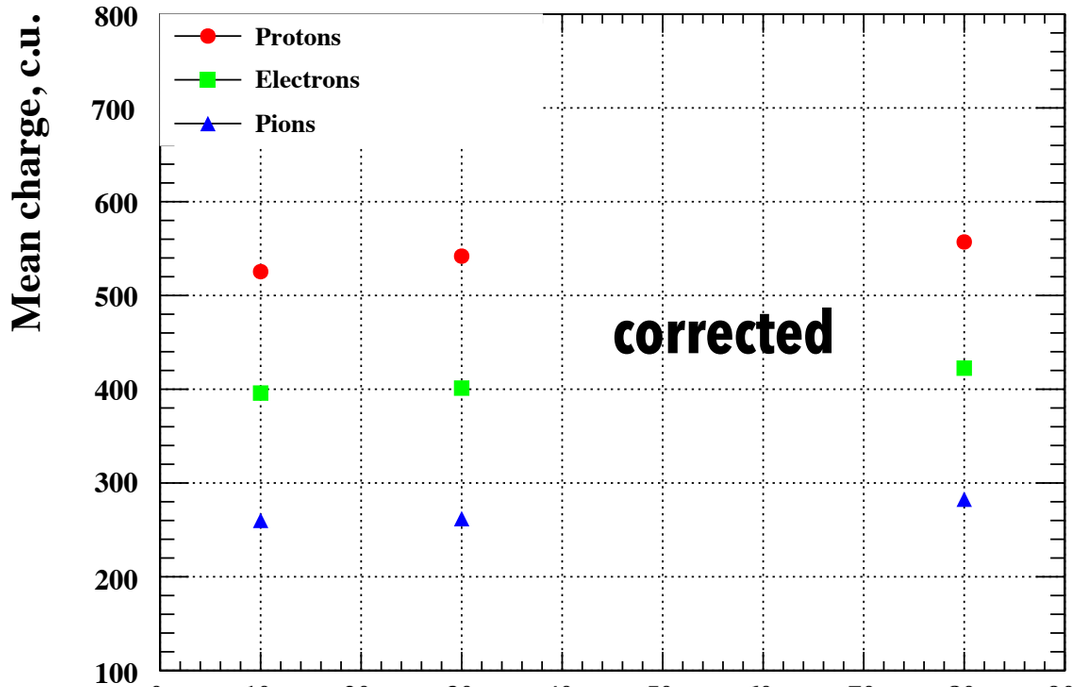

$$Data_{meas} = Data_{real} \times e^{-(\frac{Pos}{Att})}$$

$$Data_{corr} = Data_{meas} \times e^{(\frac{Pos}{Att})} \longrightarrow CorrFactor = e^{(\frac{Pos}{Att})}$$

| (130,400) | (200,380) |
|---|---|
| 1,224 | 1,17 |
| 1,079 | 1,07 |
| 1,032 | 1,02 |
| 1,220 | 1,18 |
| 1,072 | 1,05 |
| 1,031 | 1,03 |
| 1,291 | 1,23 |
| 1,072 | 1,06 |
| 1,029 | 1,03 |

## Why this is annoying:




| Pos Calc | |
|---|---|
| 87,42 | |
| 36,38 | |
| 16,30 | |
| 85,86 | |
| 34,88 | |
| 13,89 | |
| 85,19 | |
| 34,51 | |
| 13,56 | |
| | |
| 86,15 | 1,14 |
| 35,25 | 0,99 |
| 14,58 | 1,50 |

**Positions deviate coherently.**
**This is not the origin…**

**Gain correction is minor….**

**We need a huge difference in the attenuation to explain it…**