Status report - [Date Here]

Alignment and Error

Maurice Donner

Previously...

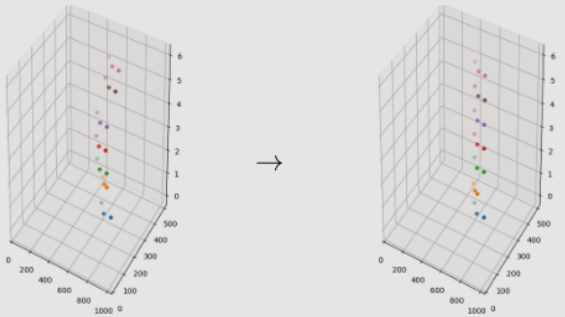
Last week: First look at alignment of planes in python, by taking mean hit offset

Cosmic Analysis

Feed it with DESY Testbeam Data, to calculate the average offset of the planes:

```
Plane 1 position: X 13.74 Y -36.65
Plane 2 position: X 25.4 Y 16.19
Plane 3 position: X 30.15 Y 21.23
Plane 4 position: X 20.29 Y 20.06
Plane 5 position: X 20.65 Y -52.77
Plane 6 position: X -22.33 Y -41.59
```

yes they're ugly, will produce some nicer plots soon!



[Status Report - Wednesday, July 9th]

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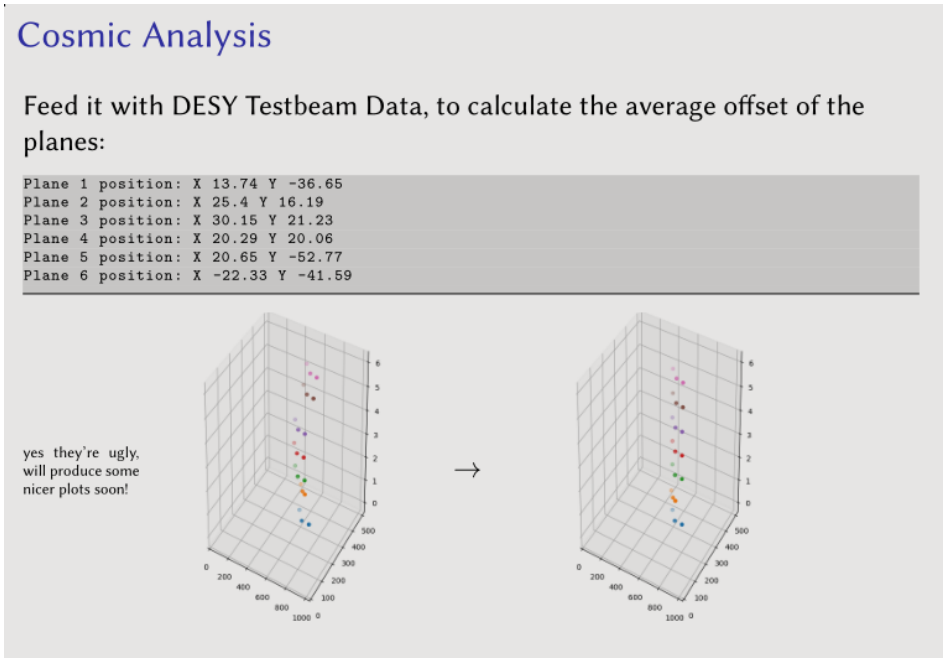

[Status Report - Wednesday, July 9th]

This Week: Differences in alignment from 2019 and 2020 Testbeam data

Alignment Error

Idea:

Look at standard deviation of hit offset, to see if comparison between two testbeam runs are inside of the margin of error

First Look: Huge σ

```
Plane 1 position: X 26.35 +- 21.04 Y -48.79 +- 16.43
Plane 2 position: X 25.9 +- 21.02 Y 17.13 +- 14.94
Plane 3 position: X 30.61 +- 21.8 Y 21.26 +- 16.02
Plane 4 position: X 20.94 +- 22.31 Y 20.2 +- 16.7
Plane 5 position: X 19.42 +- 25.1 Y -54.09 +- 19.62
Plane 6 position: X -24.11 +- 24.77 Y -43.44 +- 19.12
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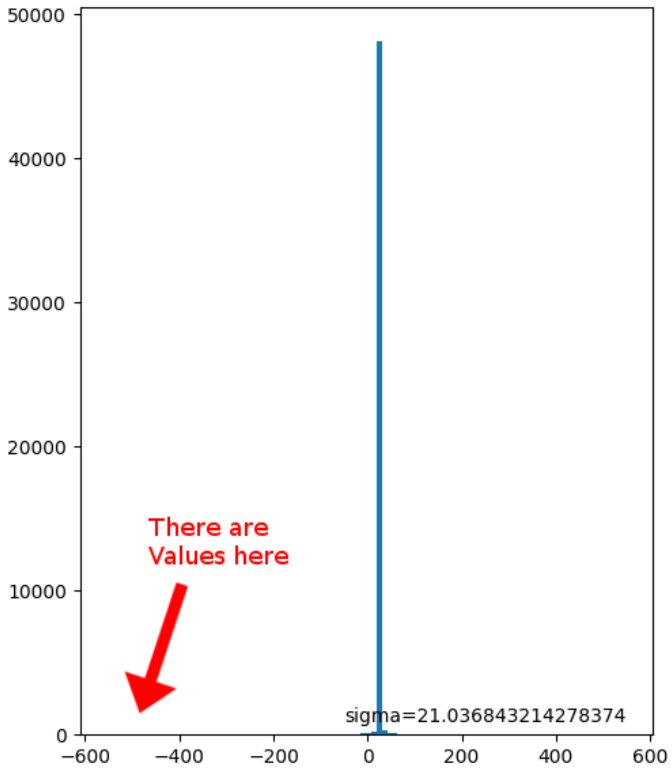

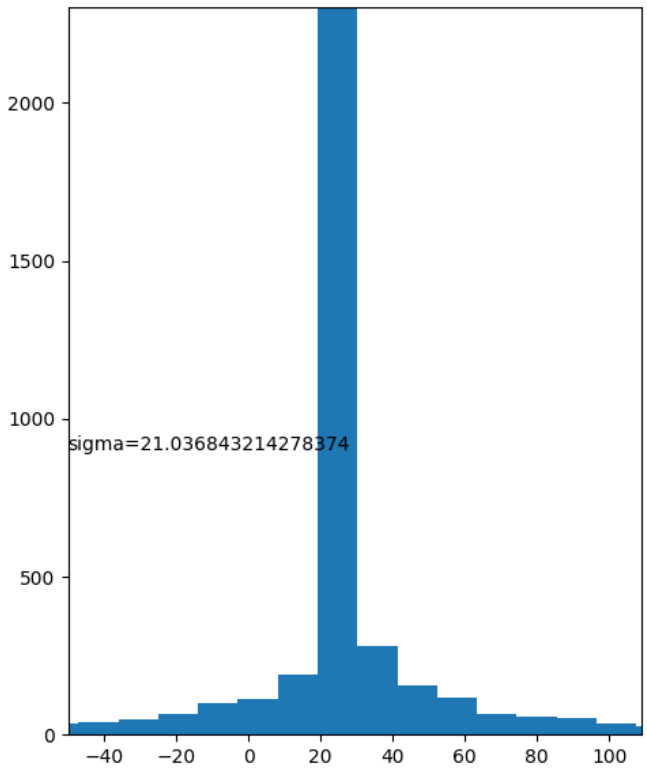

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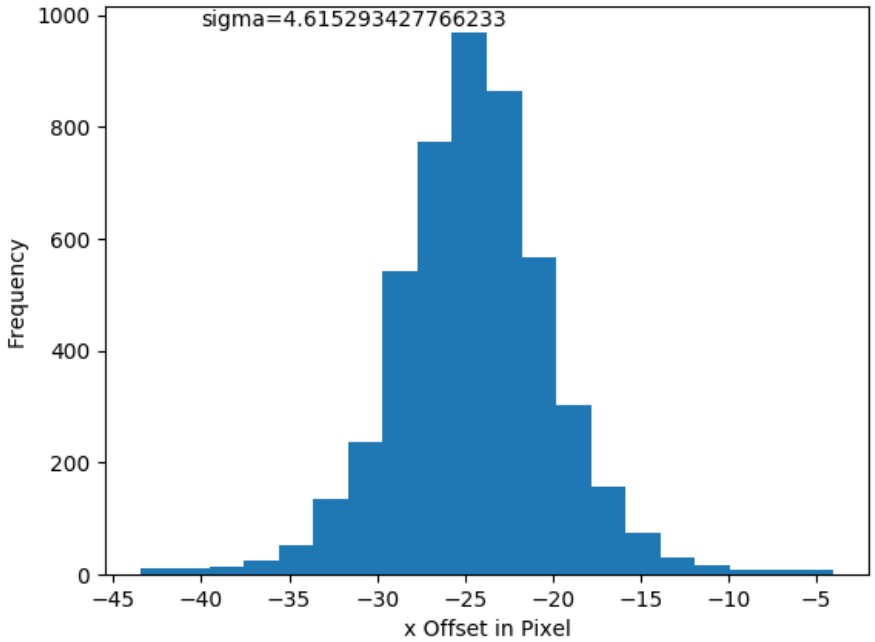

Comparing the DESY-Runs from 2019 and 2020

2019

```
Aligning planes...
Masked 2565 hits
Plane 0 : X 26.49 +- 1.56 Y -49.55 +- 1.57
Masked 2794 hits
Plane 1 : X 26.00 +- 2.28 Y 17.34 +- 2.42
Masked 3036 hits
Plane 2 : X 30.74 +- 2.80 Y 21.66 +- 2.7
Masked 3090 hits
Plane 3 : X 20.93 +- 3.41 Y 20.59 +- 3.22
Masked 3431 hits
Plane 4 : X 19.26 +- 3.98 Y -55.17 +- 3.71
Masked 3652 hits
Plane 5 : X -24.43 +- 4.61 Y -44.41 +- 4.25
```

2020

```
Aligning planes...
Masked 5390 hits
Plane 0 : X 10.89 +- 2.34 Y -46.93 +- 2.45
Masked 5628 hits
Plane 1 : X 6.06 +- 2.70 Y 11.77 +- 2.88
Masked 6142 hits
Plane 2 : X -0.41 +- 3.09 Y 6.92 +- 3.21
Masked 6694 hits
Plane 3 : X -25.89 +- 3.57 Y 8.00 +- 3.50
Masked 7347 hits
Plane 4 : X -28.06 +- 4.09 Y -34.12 +- 4.05
Masked 7681 hits
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