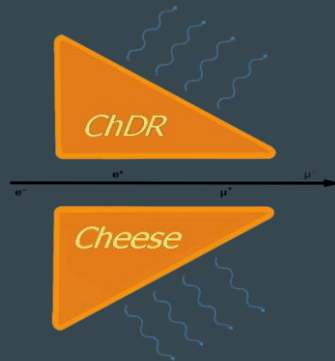


# Team ChDR-Cheese

presents

# G.O.U.D.A.



# **G**rand **O**bligatory **U**nveiling of our **D**ata **A**nalysis

# Structure

- Team Overview
- Experimental setup
- Beamdays 1- 8
- Preliminary results
- Most important: Statookies (Cookie data)

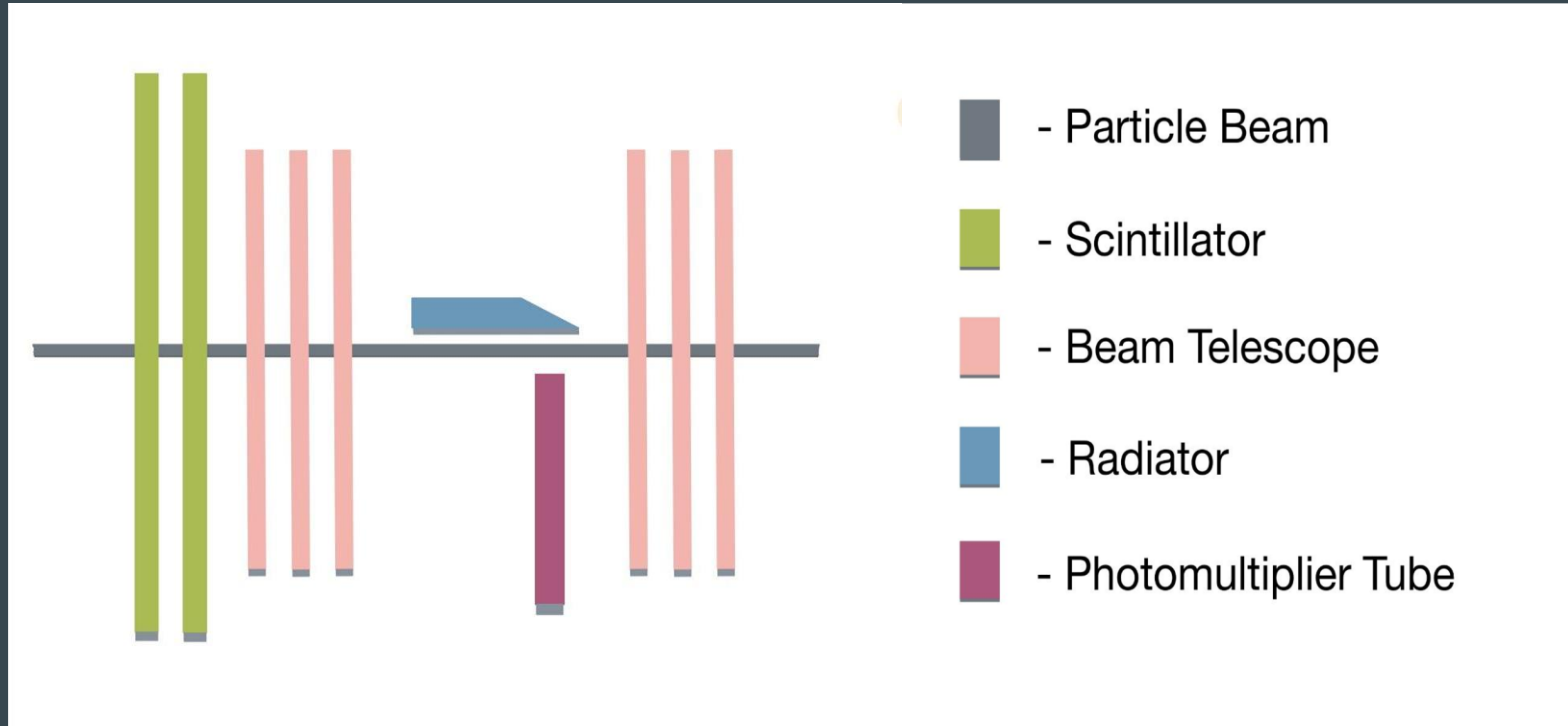
# Team Overview

18 year old students from Berlin

Recently graduated from Werner-von-Siemens-Gymnasium

Proficiency courses Maths, Physics and Computer Science

# Experimental setup

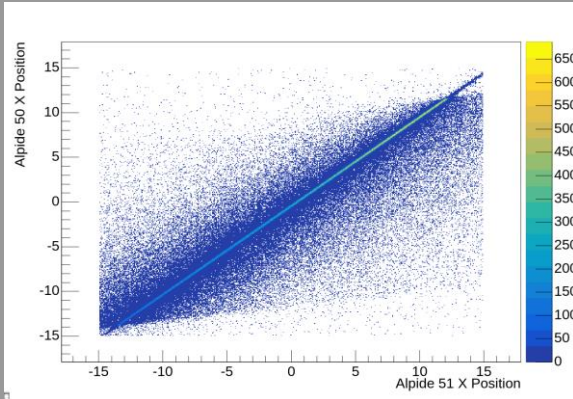


# Beamday 1: Sun 27.09.

## Experimental work:

Tried to get the Experiment running

Tried to correct correlation between the six Alptide beam telescopes



## Analysis:

Worked on training exercises provided by Christavao

# Beamday 2: Mon 28.09.

## Experimental work:

Further adjustments for the experiment were made to maximize QDC output

- PMT voltage

- Radiator position and angle

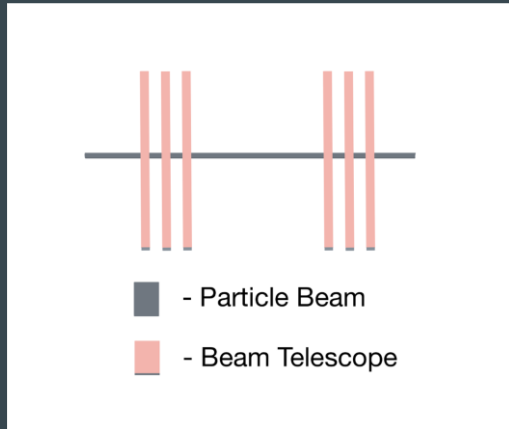
- Beam size

## Analysis:

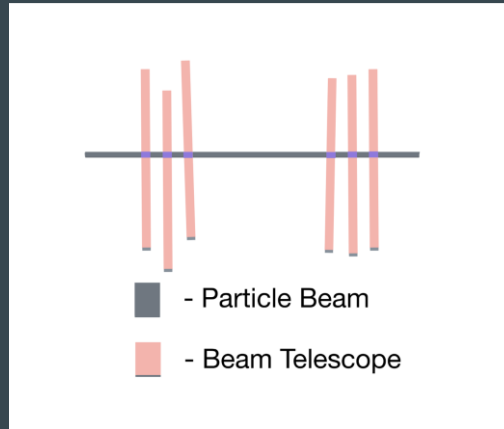
Worked on Detector alignment

At the end our approach did not work therefore no useful alignment data was taken

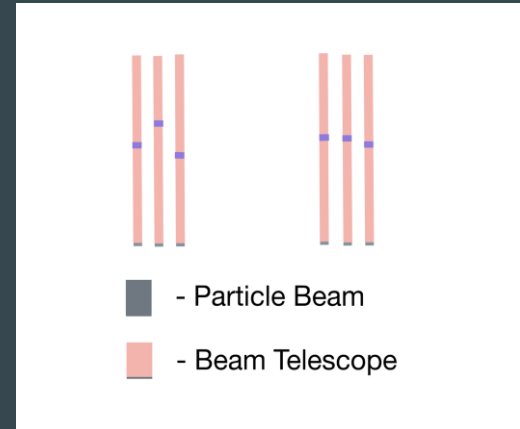
# Beamday 2: Mon 28.09.



Idealized sketch of a particle track through the beam telescopes



Actual sketch of a particle track through the beam telescopes



Resulting misaligned intersection points



# Beamday 3: Tue 29.09.

## Experimental work:

Mostly worked on NFF experiment

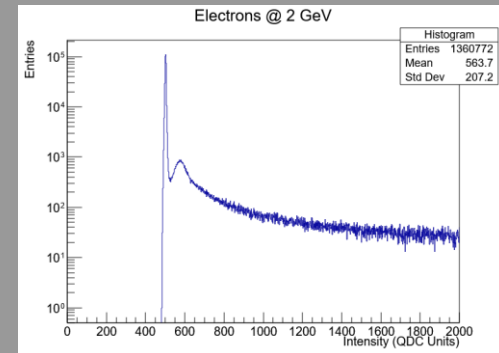
Did a few runs with energies ranging from 1 GeV to 6 GeV

Also did an overnight run

## Analysis:

Normalized plots to compare the size of the possible ChDR-peak in PMT-plots

Due to flawed methodology, those were reworked later



# Beamday 4: Wed 30.09.

## Experimental work:

Beamline was under maintenance so only limited work was possible

Took a few negative tests at the evening

- PMT completely covered

- Radiator covered with aluminum foil

- No radiator

## Analysis:

Plot with suspected ChDR was reworked  
Due to a flaw they showed no significant information

Plotted negative tests

# Beamday 4: Wed 30.09.

## Experimental work:

Beamline was under maintenance so only limited work was possible

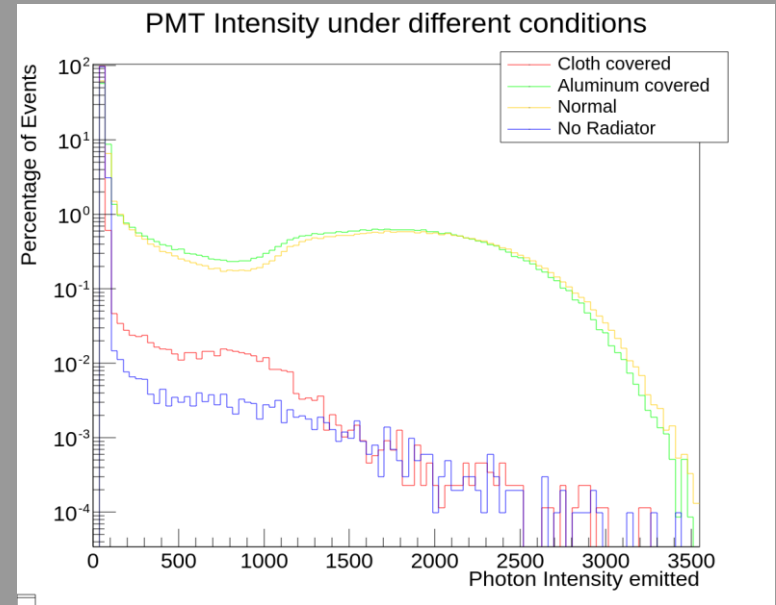
Took a few negative tests at the evening

PMT completely covered

Radiator covered with aluminum foil

No radiator

## Analysis:



# Beamday 5: Thu 01.10.

## Experimental work:

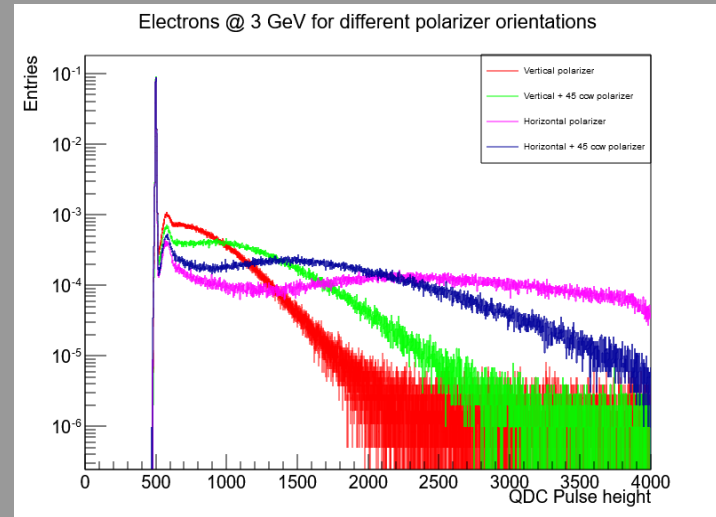
More test runs were taken

One run without radiator

Eight runs with a polarizer in different orientations

## Analysis:

### Plotted polarized Runs



# Beamday 6: Fri 02.10.

## Experimental work:

No work on our experiment was done at the beam

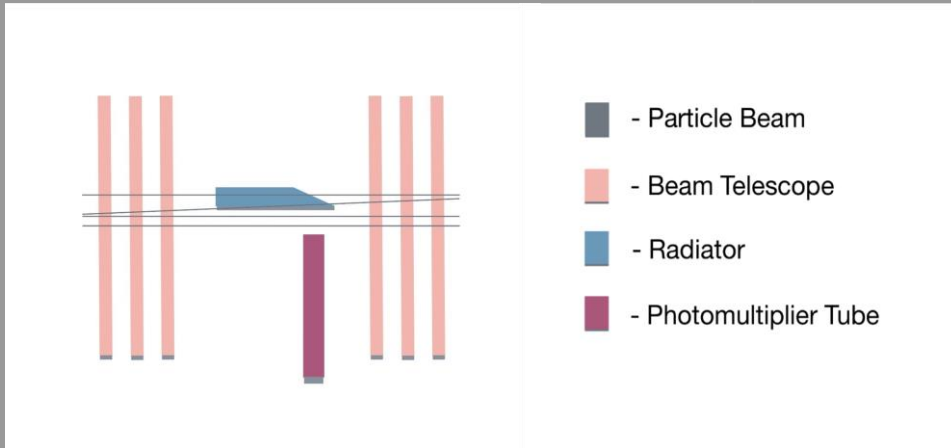
## Analysis:

Tracking and translational alignment were finally finished

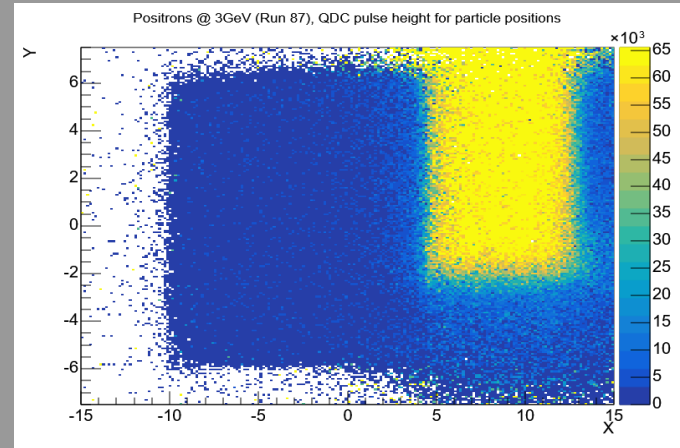
First data was interpreted

# Beamday 6: Fri 02.10.

## Analysis:



Different possible particle tracks



First X-Y-Intensity plot of our data

# Beamday 7: Sat 03.10.

## Experimental work:

No work on our experiment was done at the beam

## Analysis:

Rotational alignment was finished

# Beamday 8: Sun 04.10.

## Experimental work:

Reinstalled and realigned our experiment in the beam with a different radiator

Smaller 5 cm \* 1 cm \* 0.2 cm radiator

Aluminum plate was installed onto the radiator

A noise- measurement run was taken without beam

## Analysis:

Combined rotational and translational alignment were finished and applied to our data



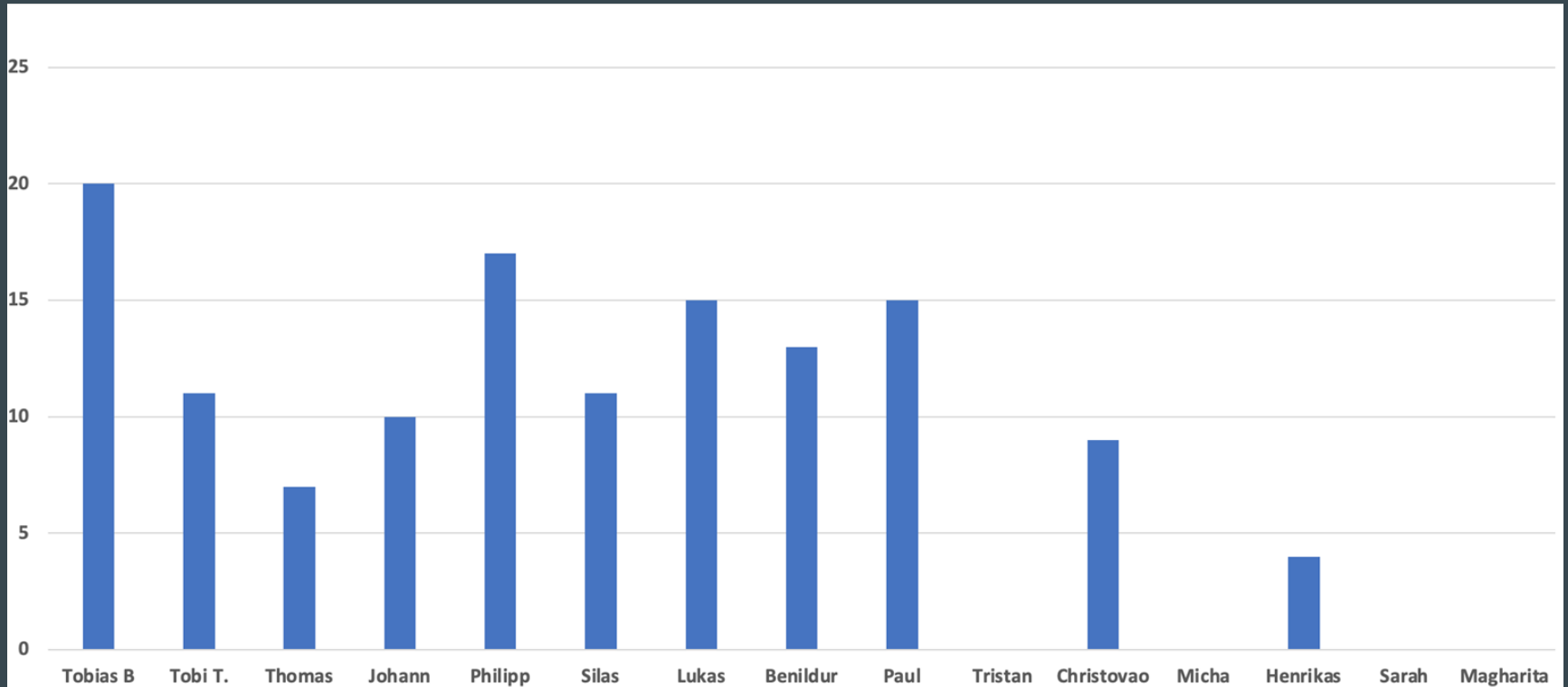
# Preliminary results

We have not found Cherenkov Diffraction Radiation yet but the data looks promising

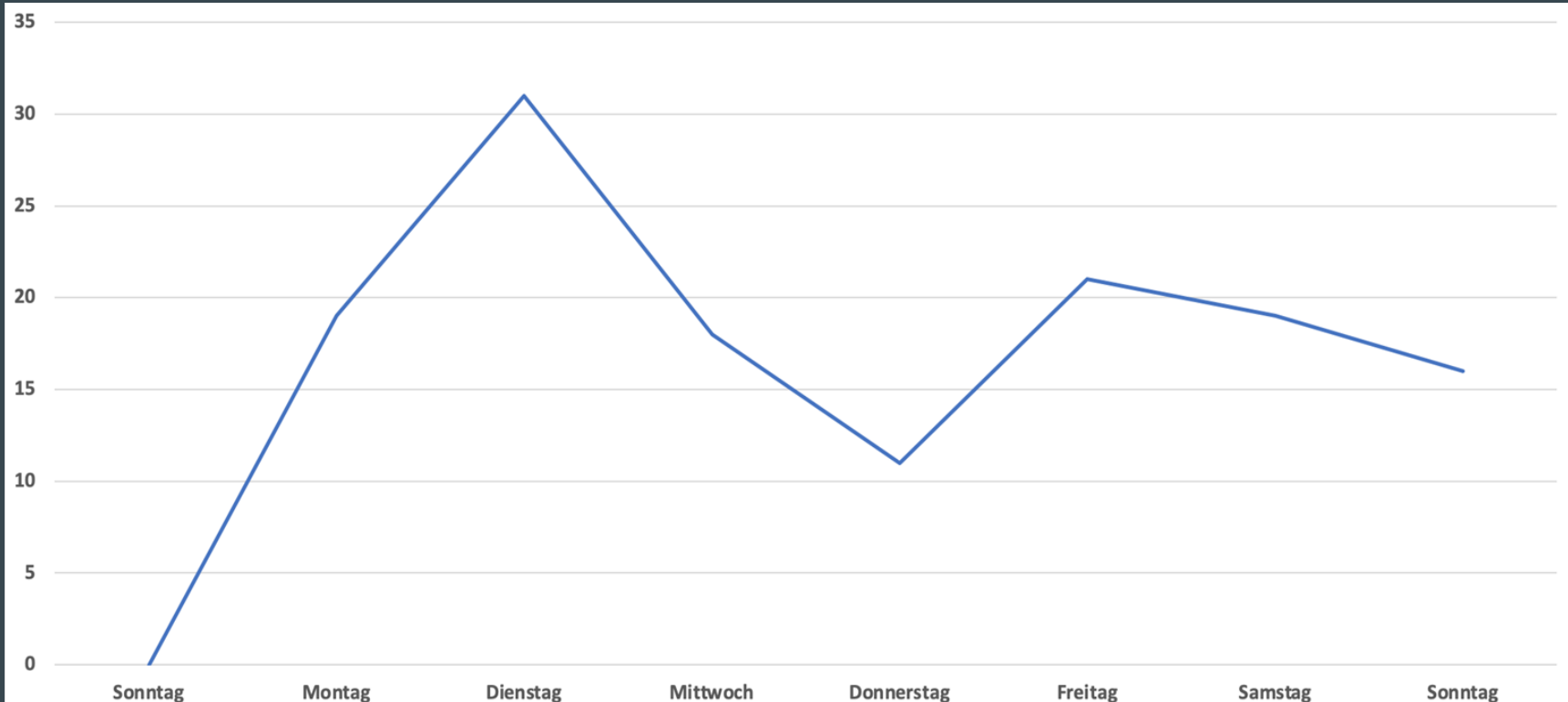
Next goal is to identify ChDR in our data

Final goal is to compare ChDR for different Beam-properties and try to perform reconstructed Beam-analysis

# Cookie data - Statookies (Cookies consumed per person)



# Cookie consumption over Time



# Sources of cookie uncertainty:

1. Johann
2. Lukas

Honorable mention:

Lukas

**Thank you for your attention!**

**Any questions?**