

# PANDA Barrel DIRC Mainz Status Report

**Matthias Hoek**, Matteo Cardinali, Werner Lauth,  
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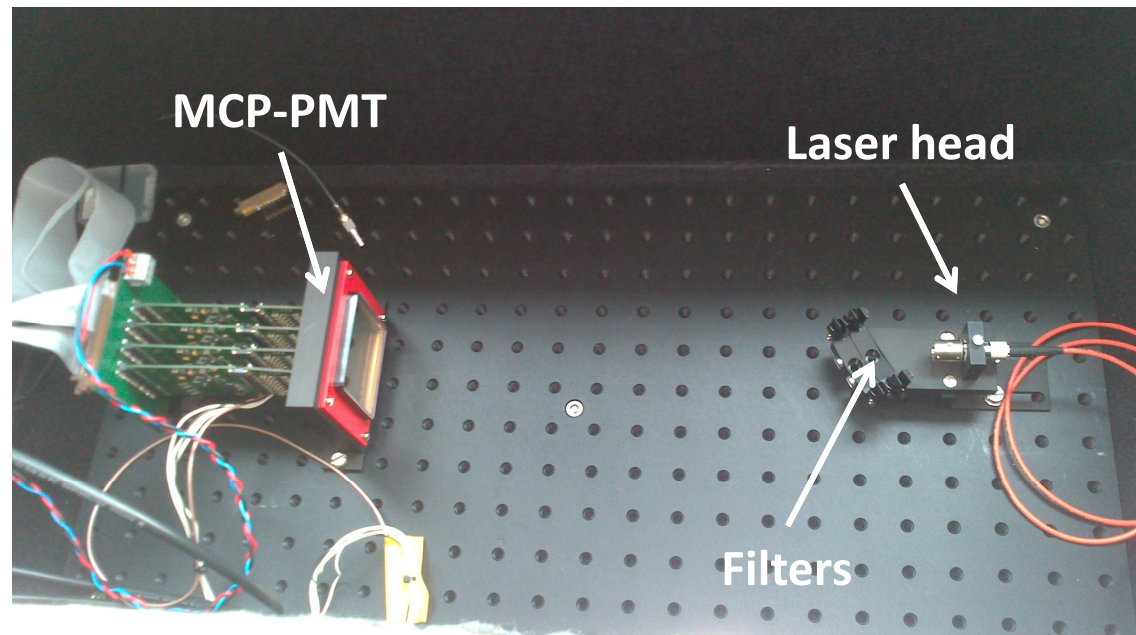
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JOHANNES GUTENBERG  
UNIVERSITÄT MAINZ



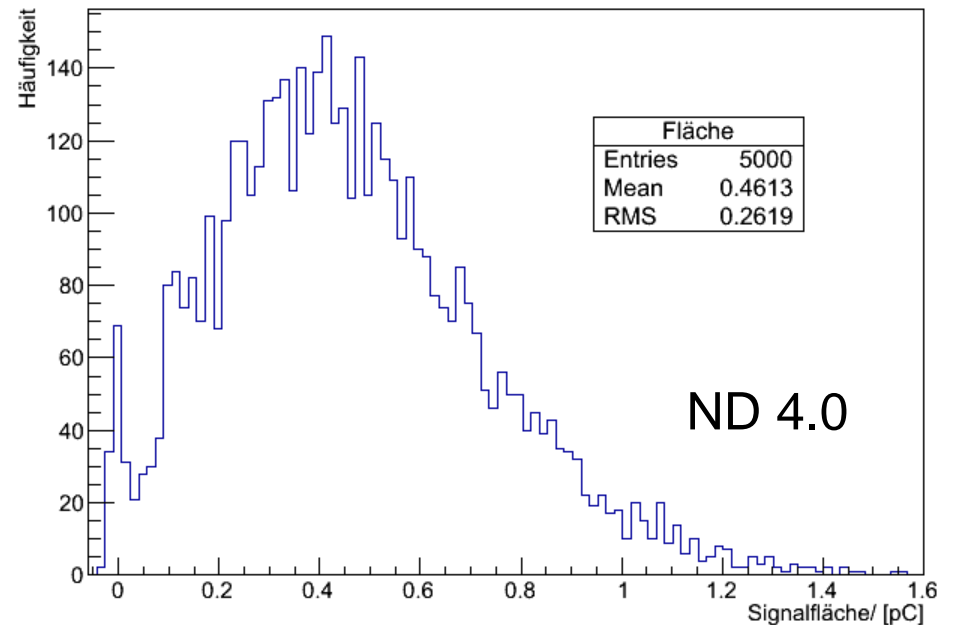
# Black Box Status

- Construction finished
  - Established hermetic light seal
- Set up optical system
  - Illuminate pixel 36
  - Adjust laser intensity
    - Gain  $\sim 1.0e6$  at 2000V
  - Check MCP-PMT timing
    - 100ps raw timing

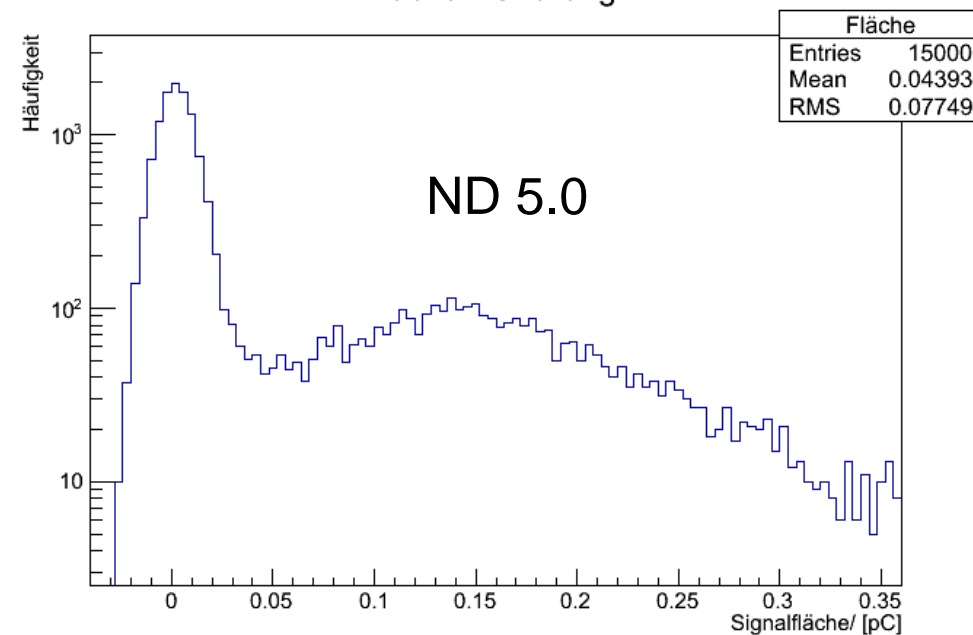


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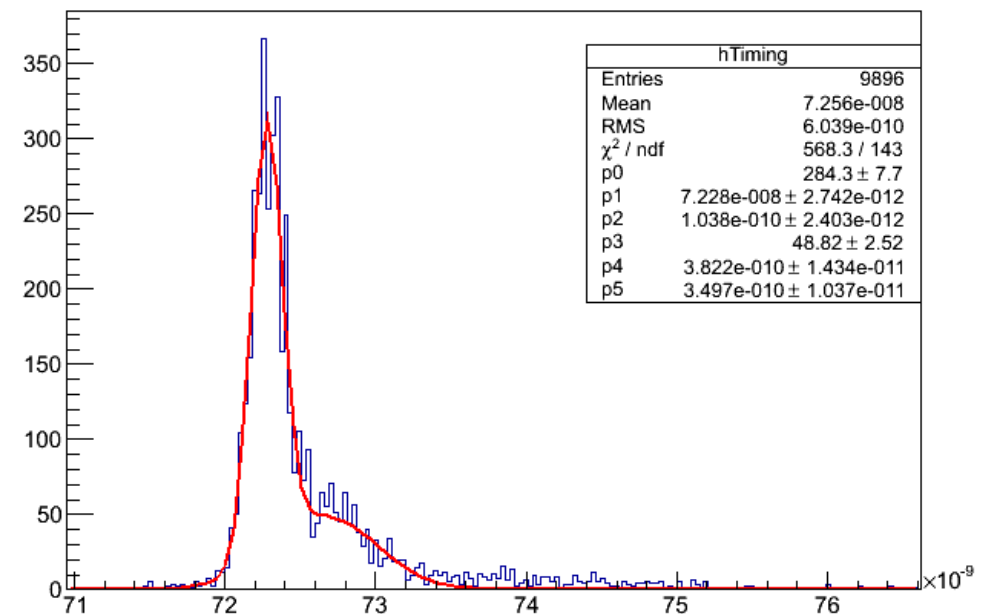
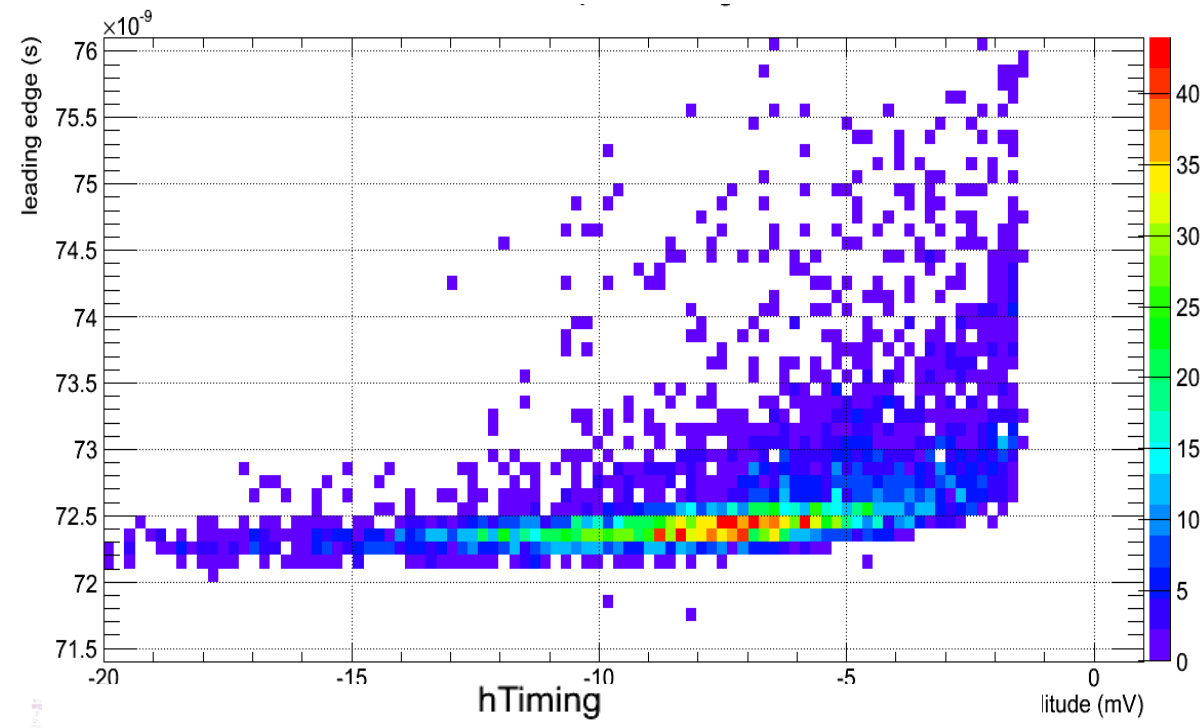


Flächenverteilung



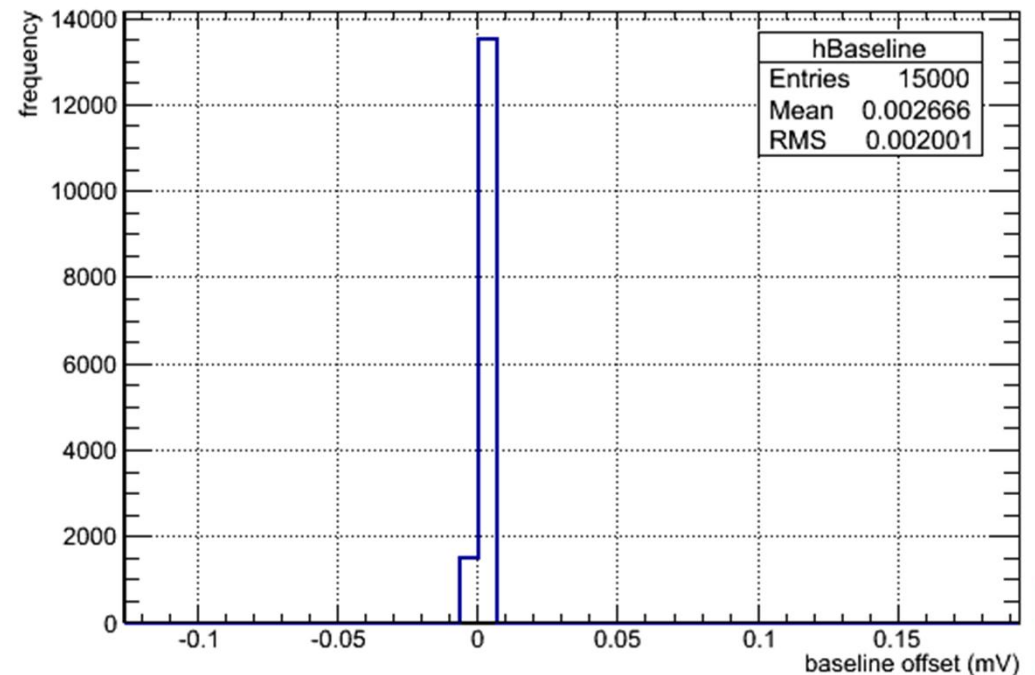
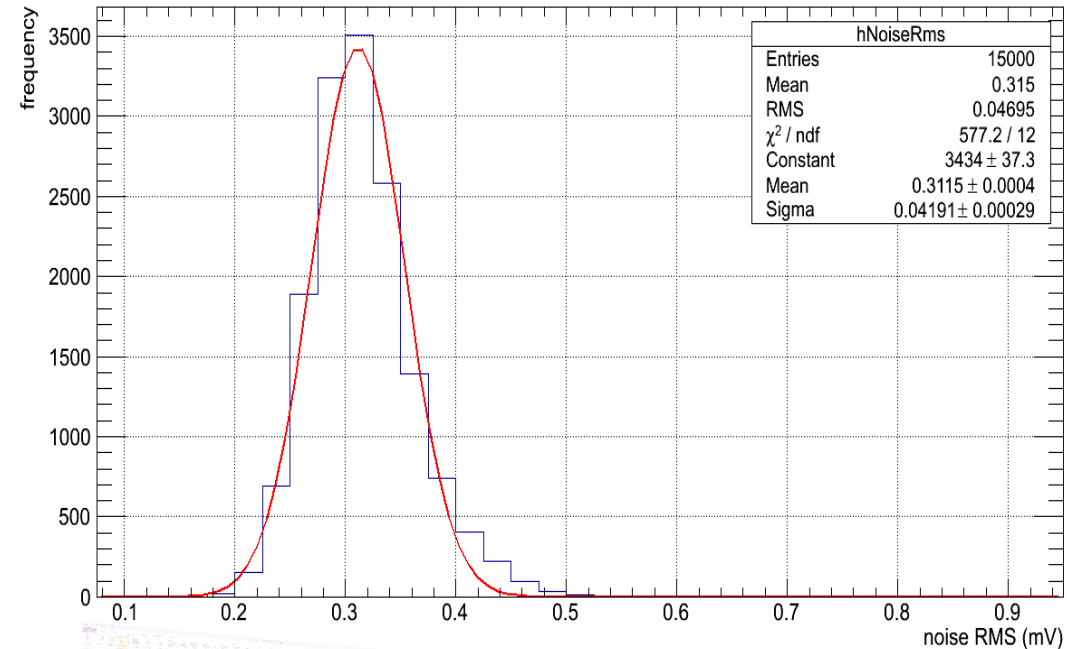
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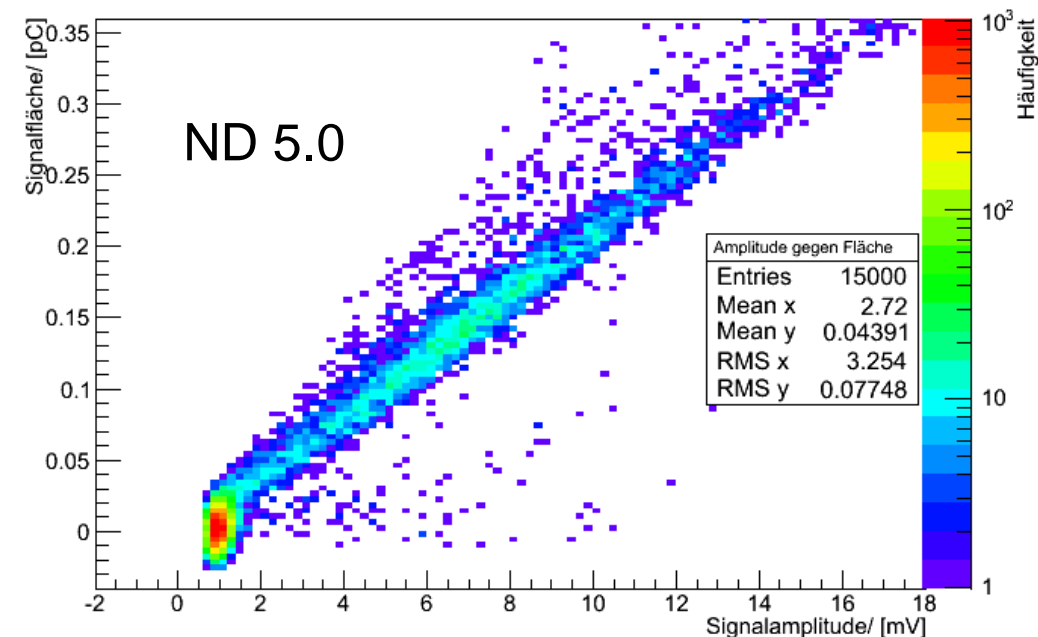
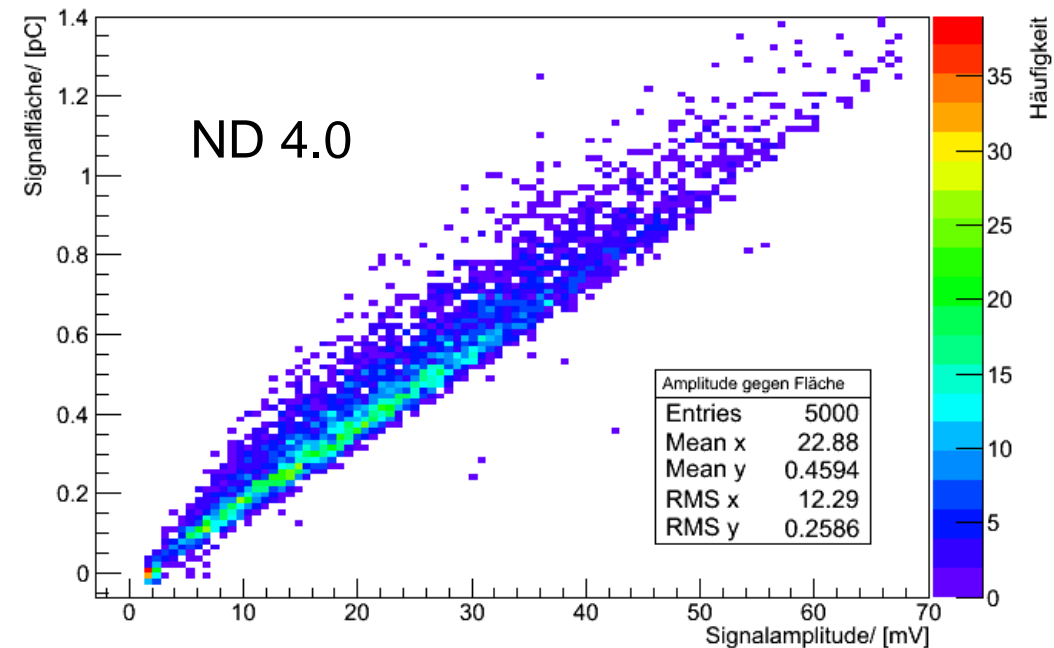
# MCP-PMT Signal Study

- Sample analogue signal w oscilloscope
  - 10GS/s, 1GHz BW
- Noise level
  - < 0.5mV RMS
  - Offset negligible
- Pulse shape & amplitude
  - Linear correlation between amplitude & area
  - Time-over-Threshold saturates (~2ns)
  - Agrees with Matteo's results



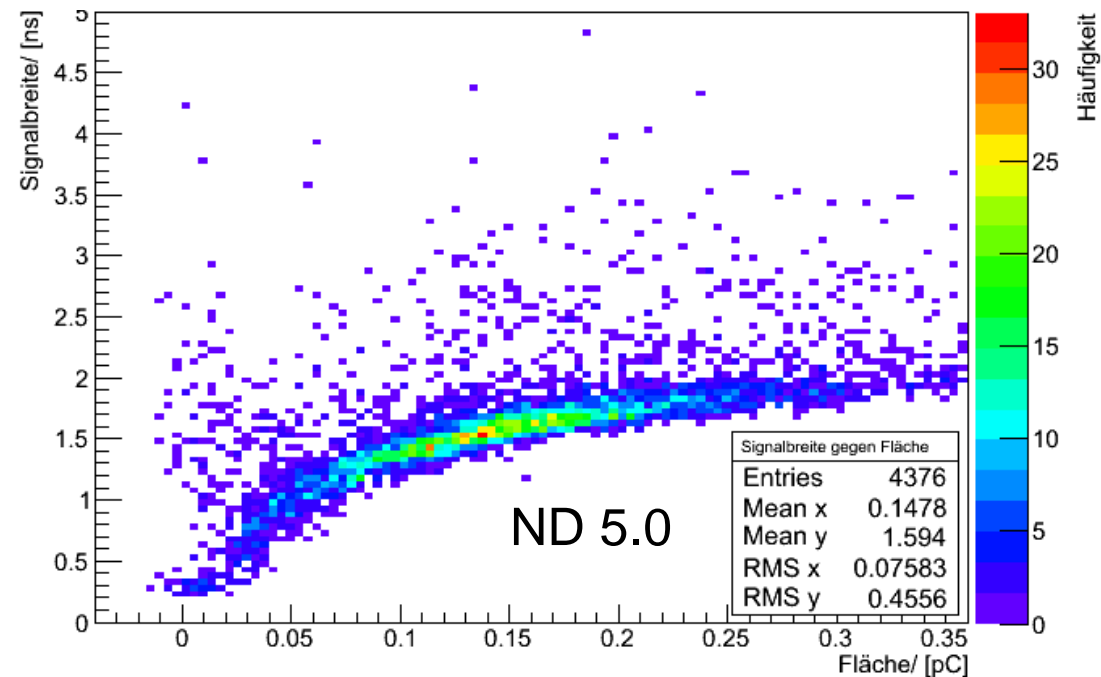
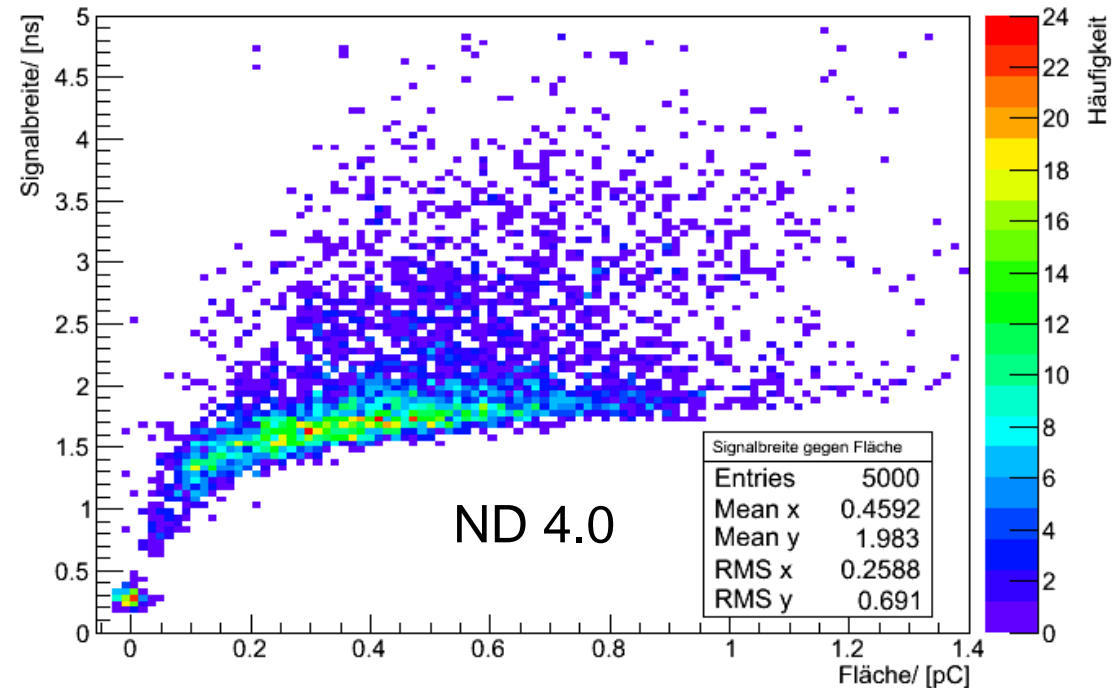
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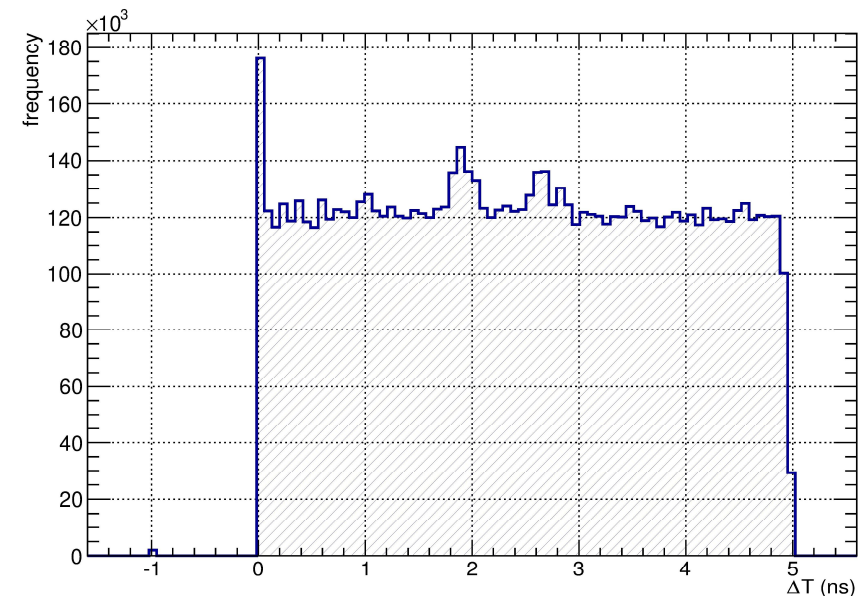
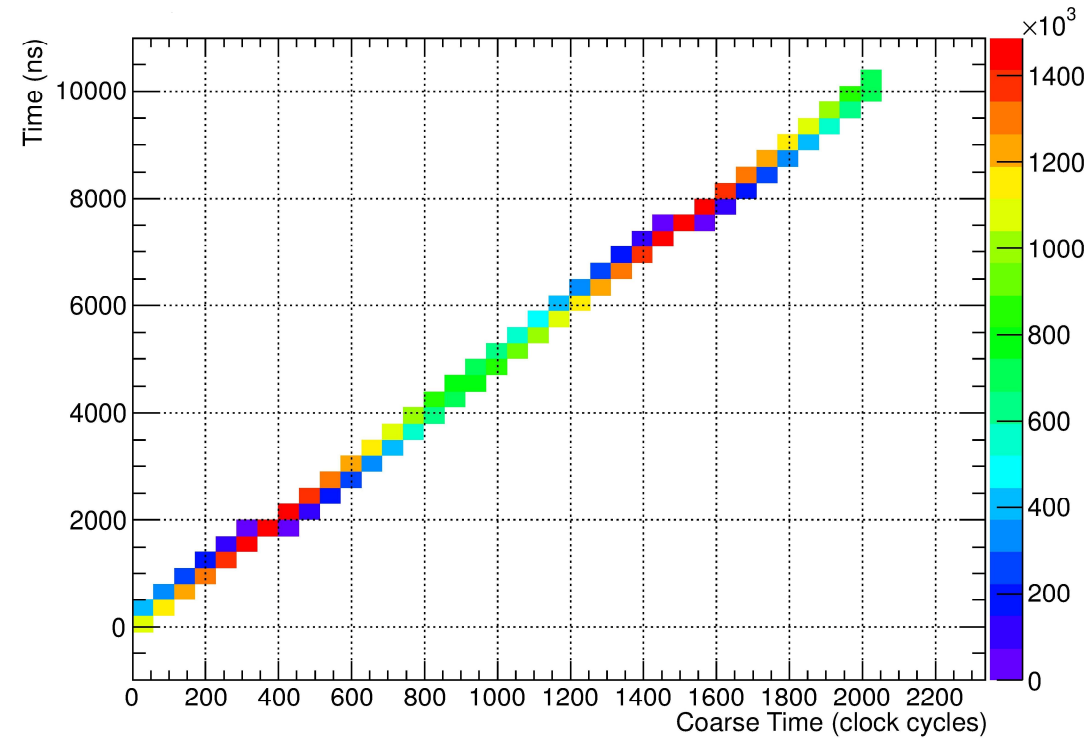
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# TRB Data Analysis

- Framework
  - Decoding & Time Calibration
    - Two calibration methods available
- Data Quality
  - < 2% event rejection
- Hits
  - Combine leading & trailing edge timestamps
  - Limited to single hits for now
- Timing
  - 100kHz trigger rate  $\rightarrow$  10 $\mu$ s window
  - Investigate hit distribution within event





# TRB Data Analysis

## ■ Framework

- Decoding & Time Calibration

Two calibration methods available

## ■ Data Quality

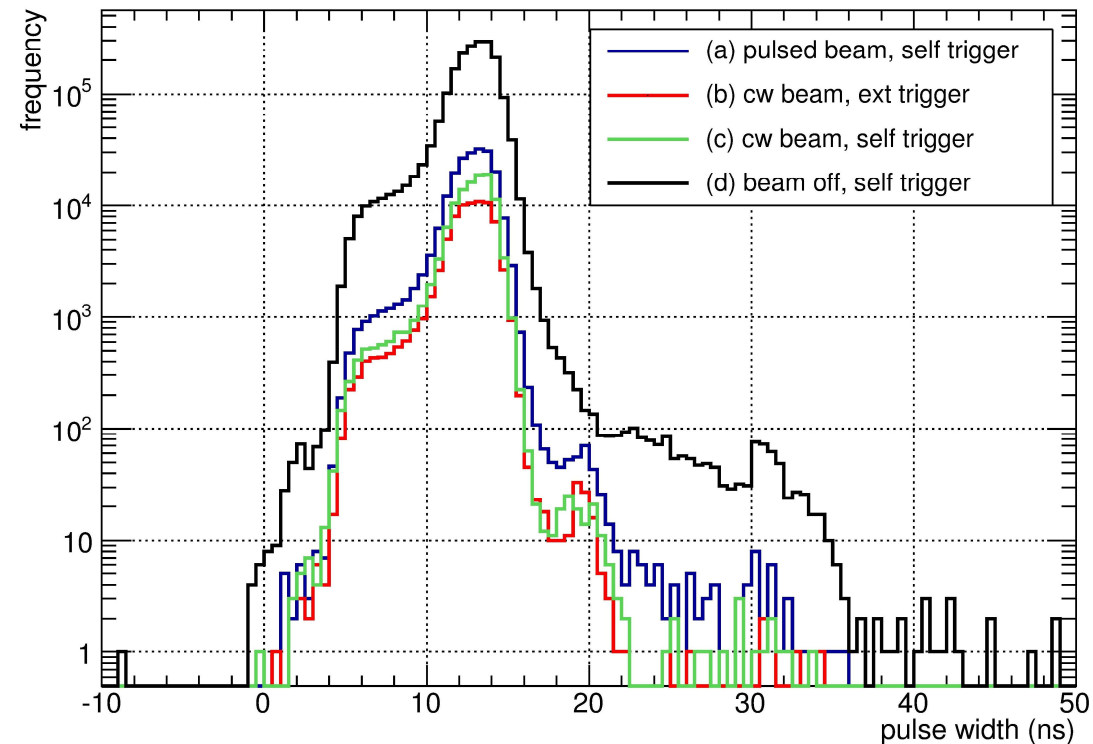
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## ■ Hits

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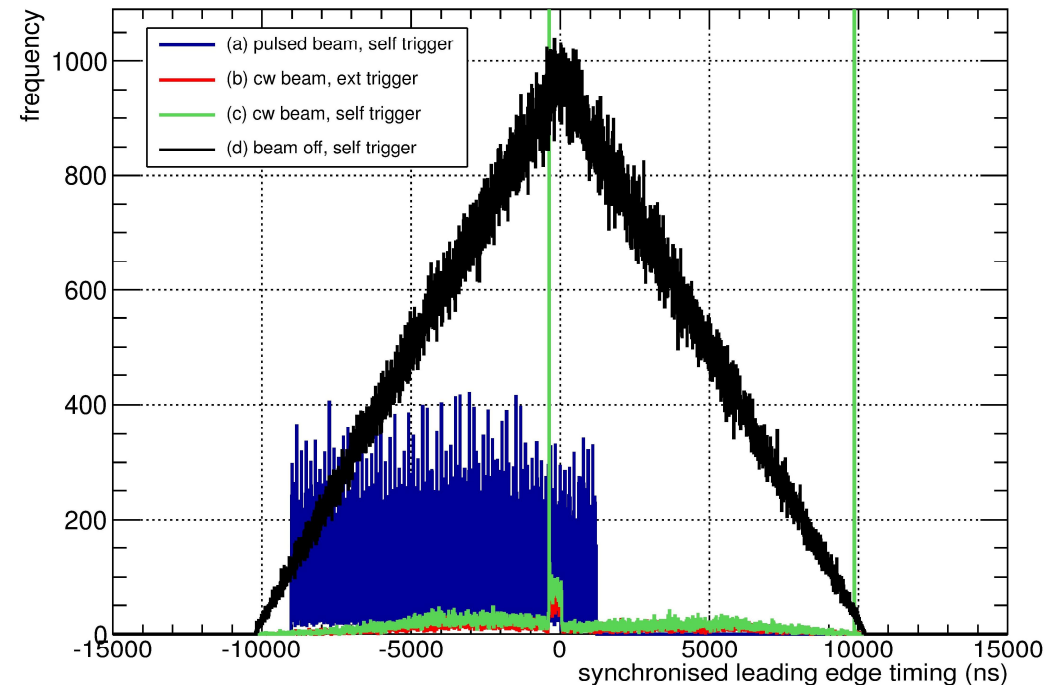
## ■ Timing

- 100kHz trigger rate → 10μs window
- Investigate hit distribution within event



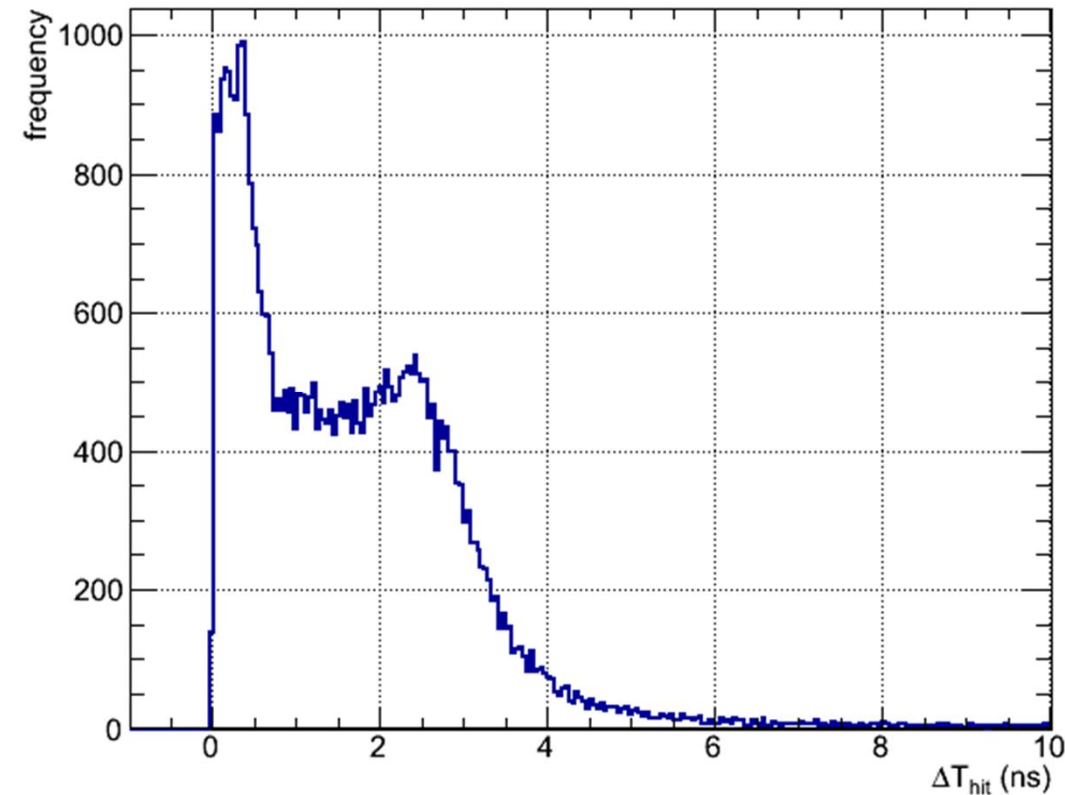
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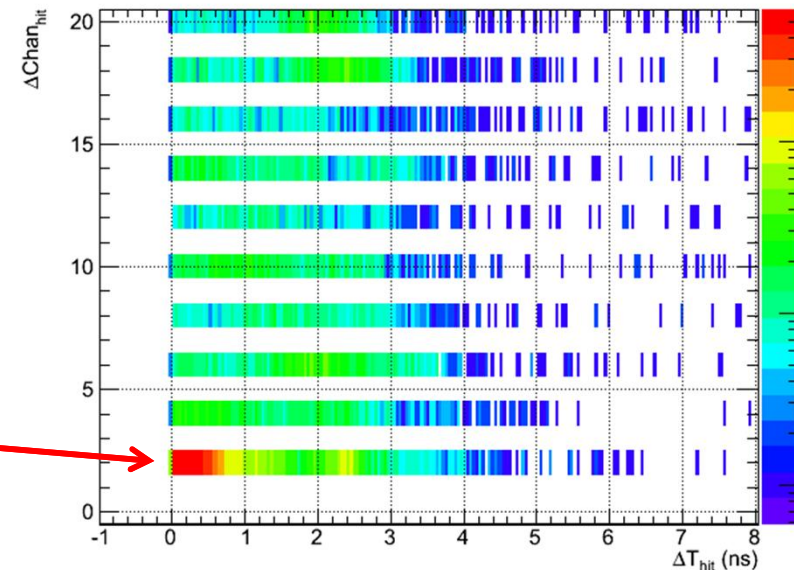
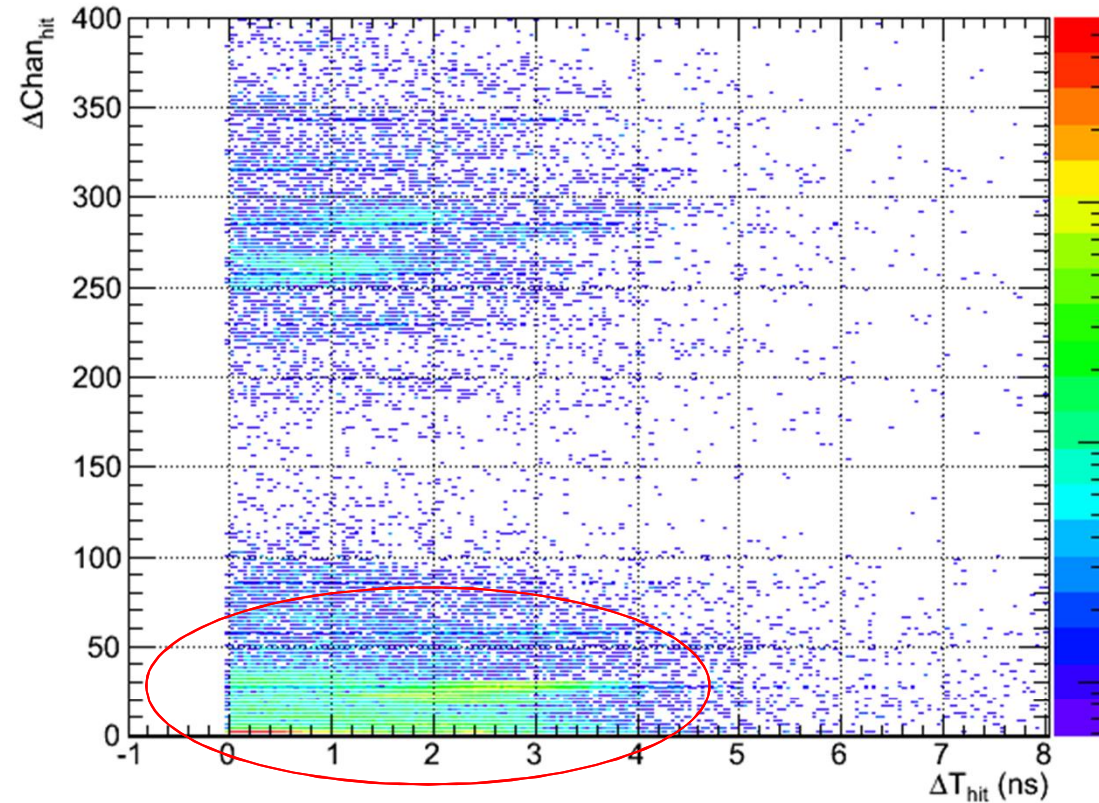
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**Crosstalk**

# Next Steps

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- Black Box
  - Run w TRBv3 DAQ
- Electronics
  - Study NINO threshold behaviour
  - Investigate crosstalk characteristics
  - Waiting for COME&KISS
- Data Analysis
  - Implement clustering algorithm
- Tracking
  - Setting up  $10 \times 10 \text{cm}^2$  GEM ( $\sim 250 \mu\text{m}$  resolution)
- Test experiment preparations
  - Electrons at MAMI X1 beam line