Olympus Test Experiment

Status report

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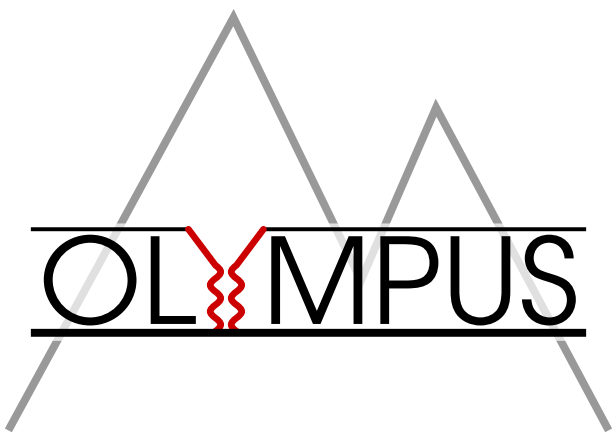


What we have done

- Operated the target system with gas and beam
- Optimized and operated all detectors
- Run with electrons and positrons at 2.0 GeV
- Looked for count rates
- Took data of elastic events

DORIS operation

- Back out at 4.4 GeV positrons (during the night)
- Electron and positron beams of 2.0 GeV (limited to $\lesssim$ 100 mA)
- Injection flashes happened sometimes
- Large day to day variations in beam stability

$\rightarrow$ Good start, but need some further investigations

Target and Vacuum

- Vacuum fine with 6 turbos
  - without gas 10^{-9} torr
  - with 0.4 sccm flow 10^{-6} torr
  - with 1 sccm flow $3{\cdot}10^{-6}$ torr
  - recovery time approx. 15 minutes
- Life time behaves as expected with gas flow
- Heat load of cell much more than expected $\rightarrow$ Disassembly
- Installation of more T sensors (up to RT)

Countrates

2.0 GeV, 70 mA, e^+

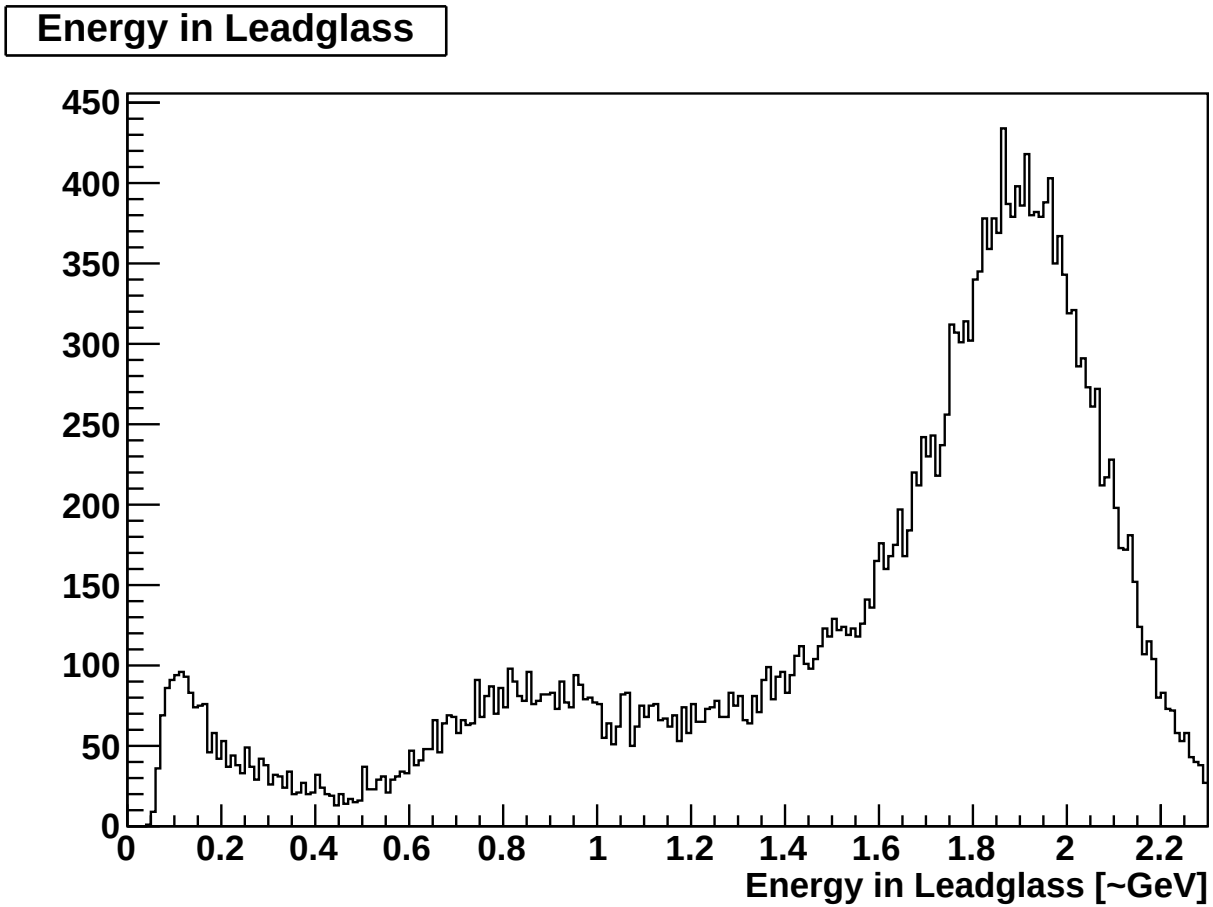
Detector	/w gas	/wo gas
LGC	16 kHz	7 kHz
PAD	420 Hz	120 Hz
SD	3 kHz	470 Hz
TC	660 kHz	55 kHz

$e^- - e^+$ Difference

$e^- \approx$ factor 2 too high in comparison, but only one rate.

Background coutrates scaler mainly quadratically with beam current (rest gas scattering).

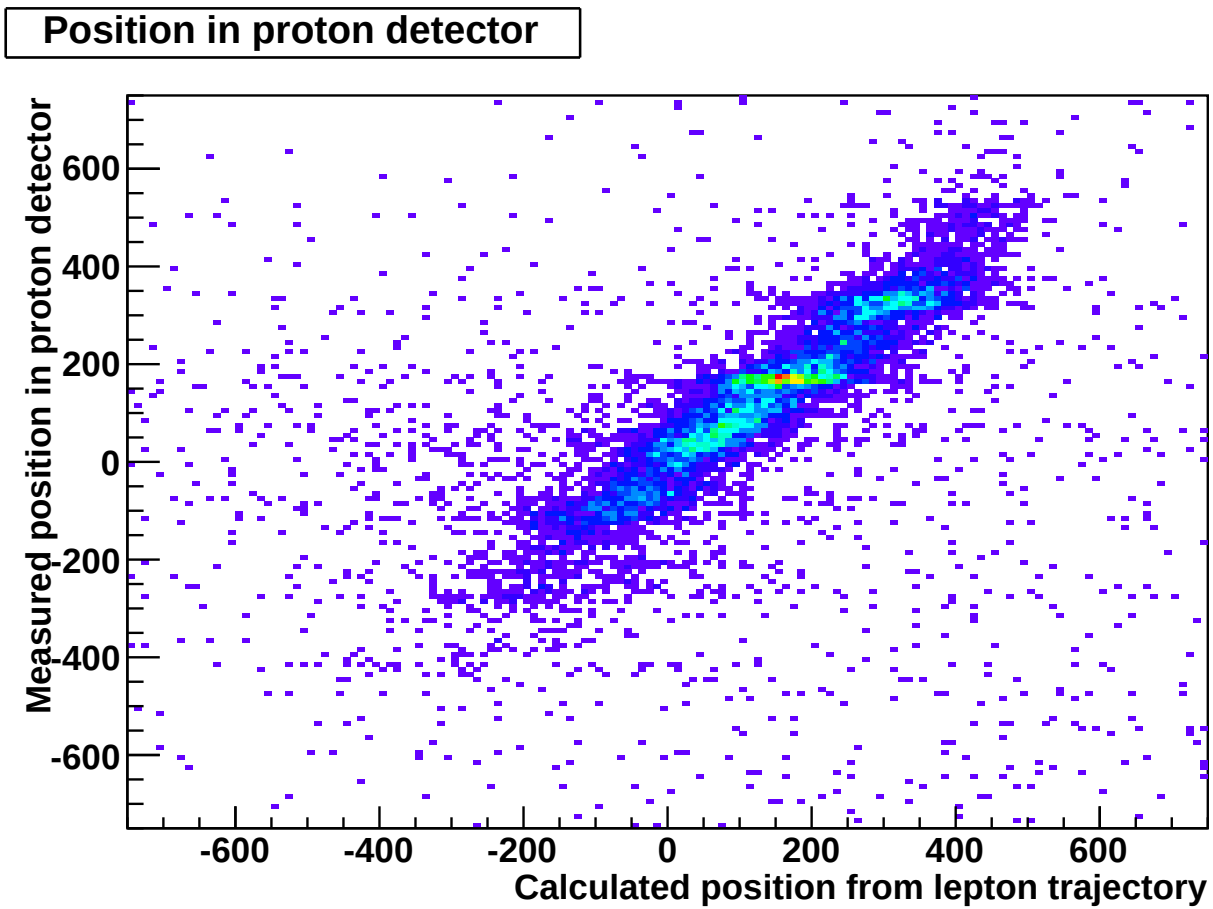
Lead Glass Calorimeter LGC



AK + JCB

→ Increase gain on outer crystals to improve energy resolution.

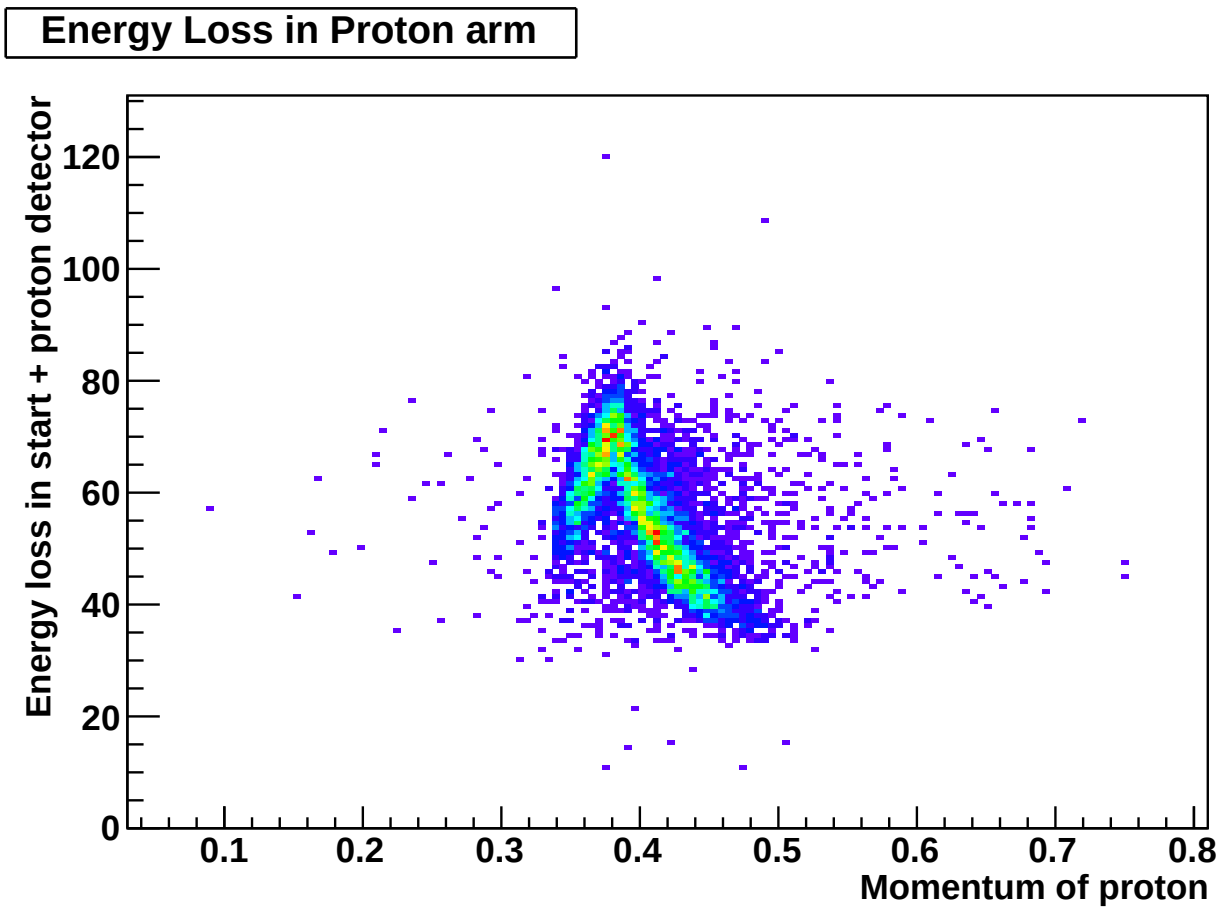
Proton Arm Detector PAD



AK + JCB

→ Investigate peaks in timing spectra of TOFs.

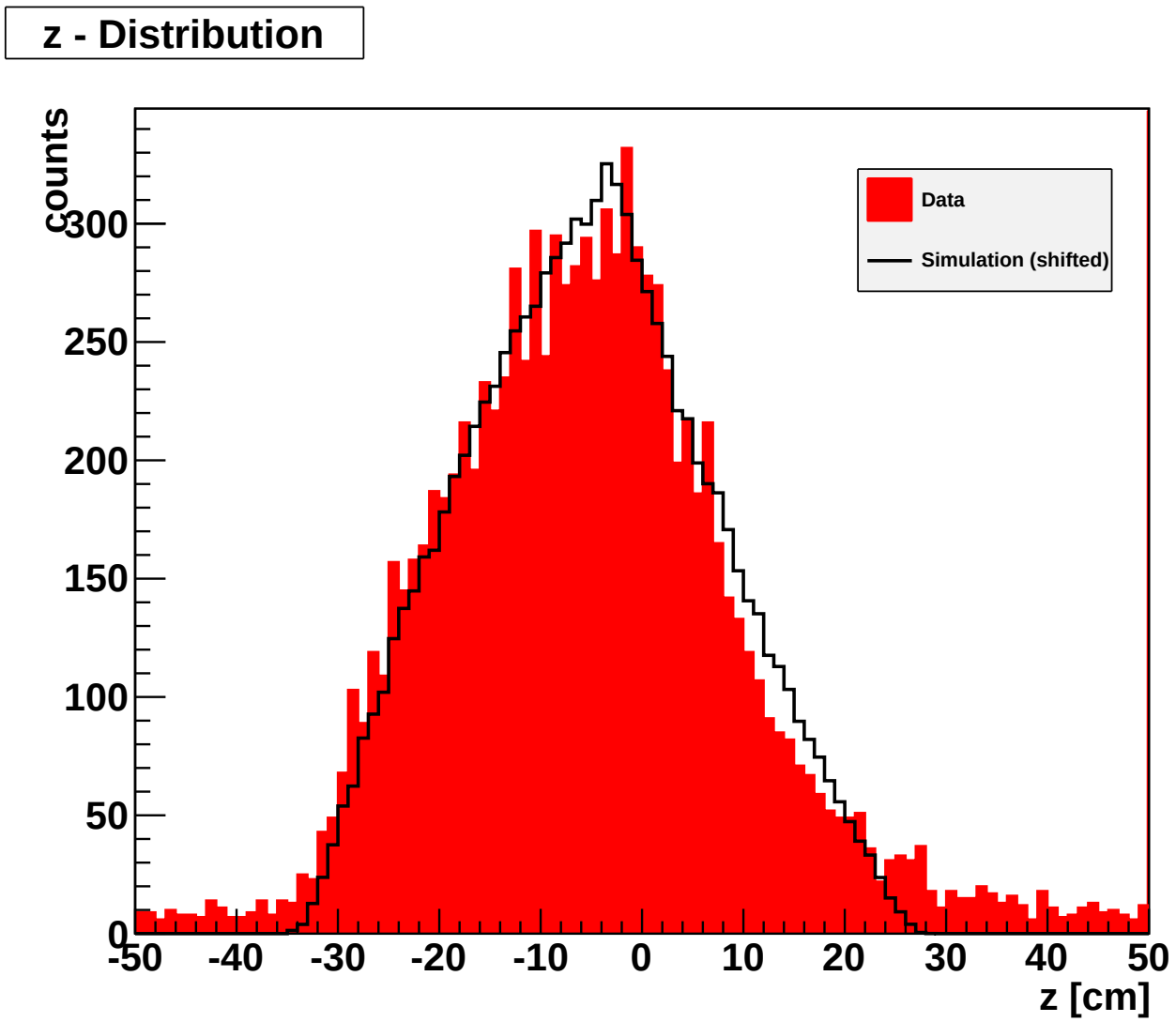
Start Detector SD



AK + JCB

→ Adjust TDC signals and verify thresholds.

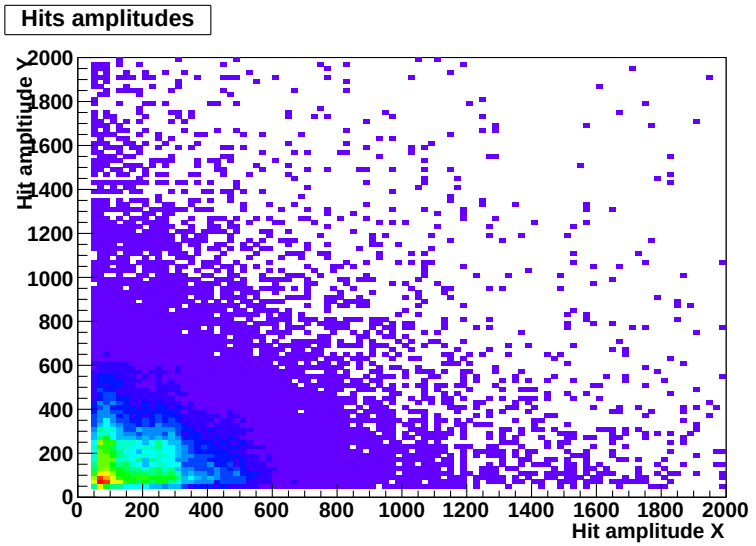
MWPCs

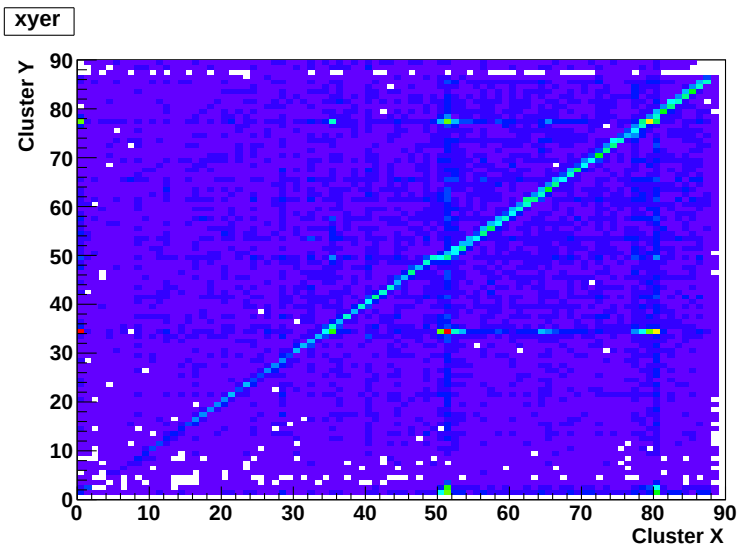

z - Distribution
counts
300
250
200
150
100
50
0
-50
-40
-30
-20
-10
0
10
20
30
40
50
z [cm]
Data
Simulation (shifted)

AK + JCB

GEM

Cluster amplitudes in both projections





Combinatorial hit distribution. Cross talk on neighbor strips?