AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Status of testbeam analyses at AGH-UST
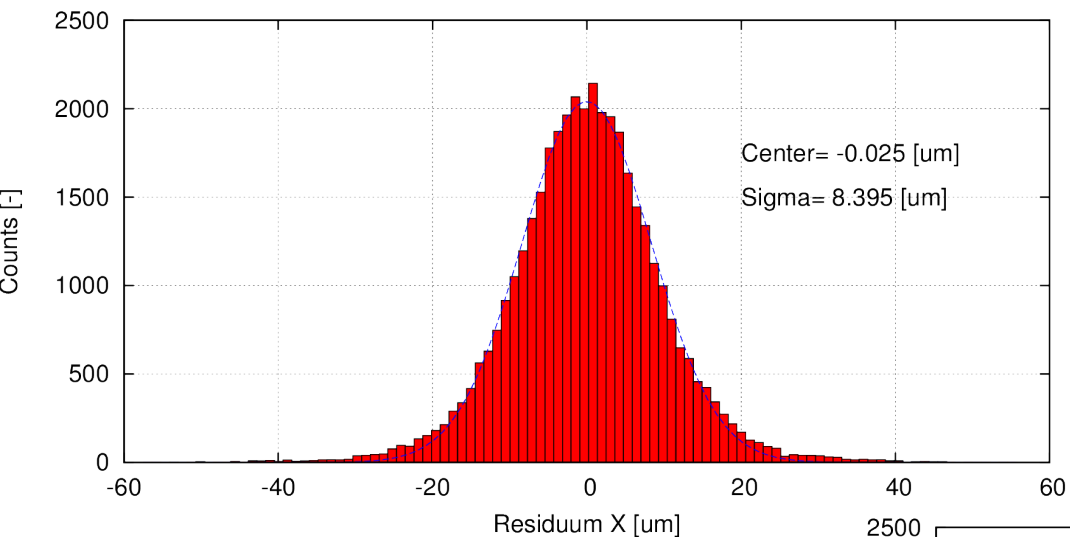
Jakub Moroń

AGH-UST

Faculty of Physics and Applied Computer Science
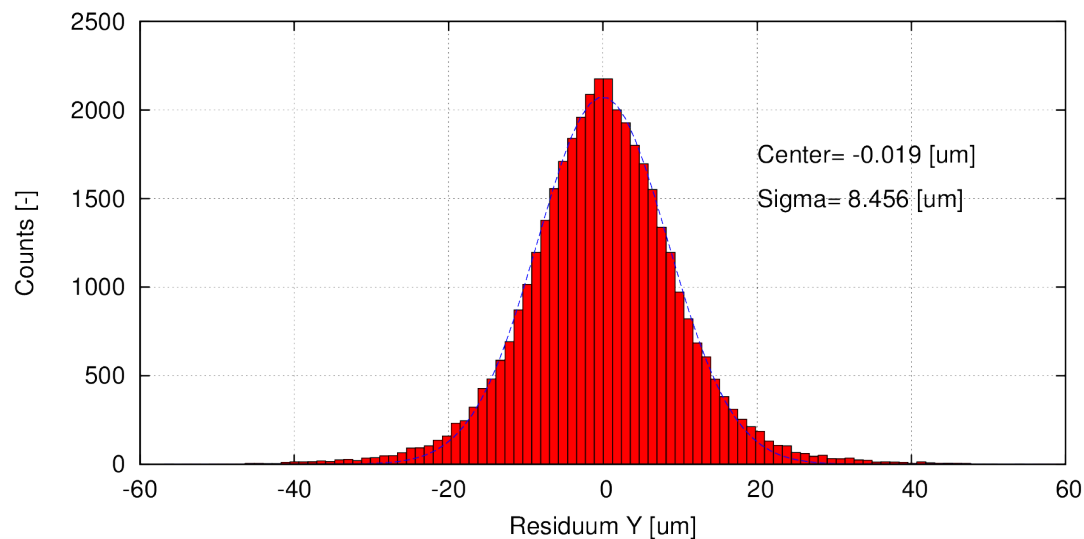AGH University of Science and Technology

Telescope data
Verification of telescope performance

All telescope planes, Telescope runs 233-242

Center= -0.025 [um]

Sigma= 8.395 [um]

Residuum X [um]

Counts [-]

All telescope planes, Telescope runs 233-242

Center= -0.019 [um]
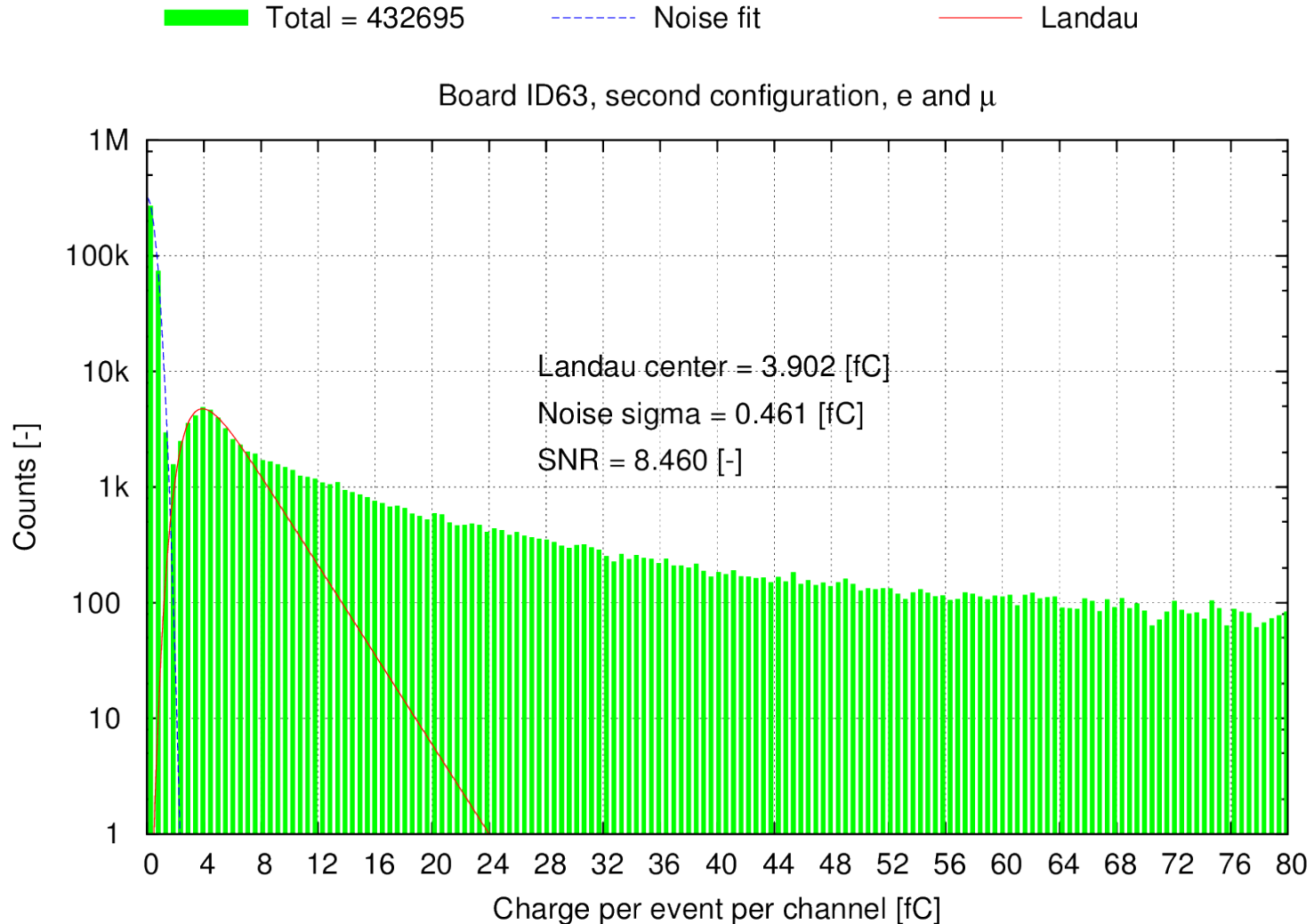
Sigma= 8.456 [um]

Residuum Y [um]

Counts [-]

- Preliminary results good enough
- Not finished, work in progress…

LumiCal readout boards calibration

- Full calibration report avaliable online:

  https://asic.fis.agh.edu.pl/fcal/lumi_calibration.pdf

	Gain [LSB/pC]			
	Preamp HIGH, Shaper HIGH		Preamp HIGH, Shaper LOW	
Board ID	"R feedback"	"MOS feedback"	"R feedback"	"MOS feedback"
63	7657 ± 37	16 000 ± 117	1447 ± 6	3007 ± 25
64	7672 ± 31	16 086 ± 493	1480 ± 4	3067 ± 17
67	7434 ± 57	15 068 ± 419	1452 ± 10	3016 ± 39
76	6879 ± 15	14 362 ± 157	1257 ± 3	2637 ± 7

# Energy spectrum done separately for all boards in all configurations

Board ID63, second configuration, e and μ

Total = 432695   Noise fit   Landau

Landau center = 3.902 [fC]
Noise sigma = 0.461 [fC]
SNR = 8.460 [-]

Gain tuning based on landau peak

|	Landau center [fC]		
	Configuration		
Board ID	1	2	3
63	3.689	3.902	3.987
64	3.689	4.048	3.988
67	3.619	3.619	3.673
76	4.098	4.151	---

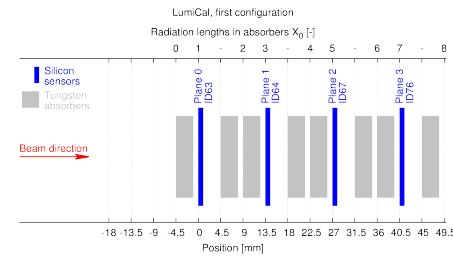# Shower development
Example for configuraton number 2
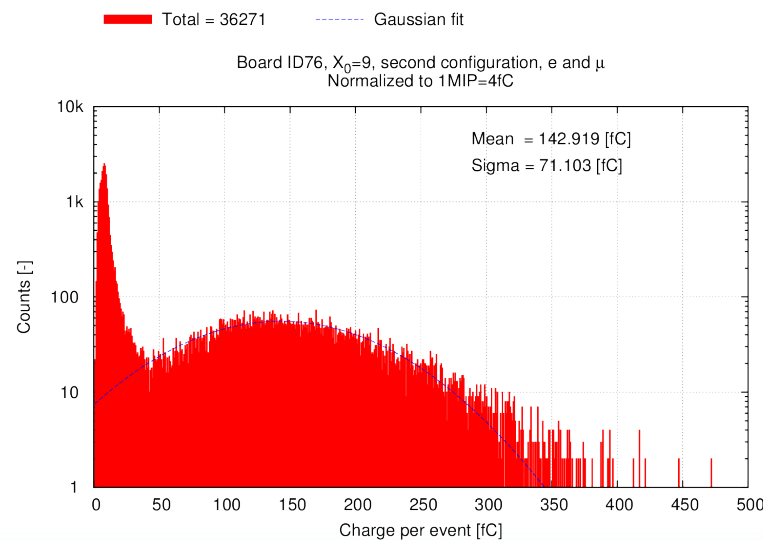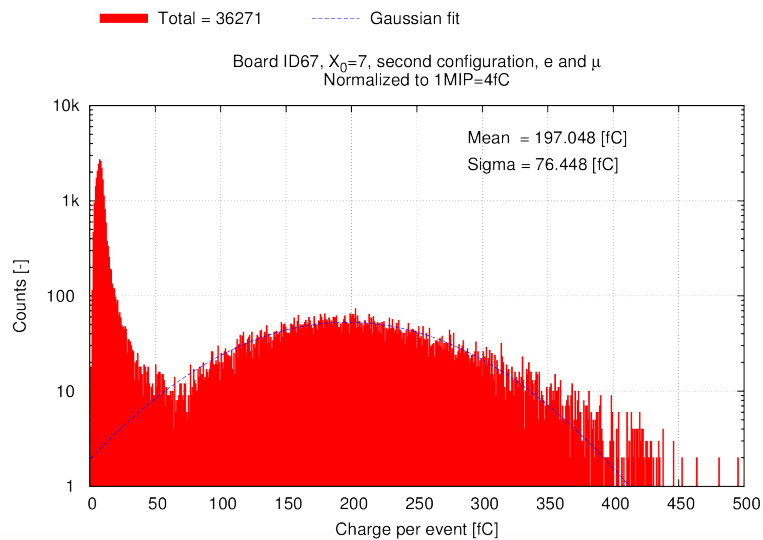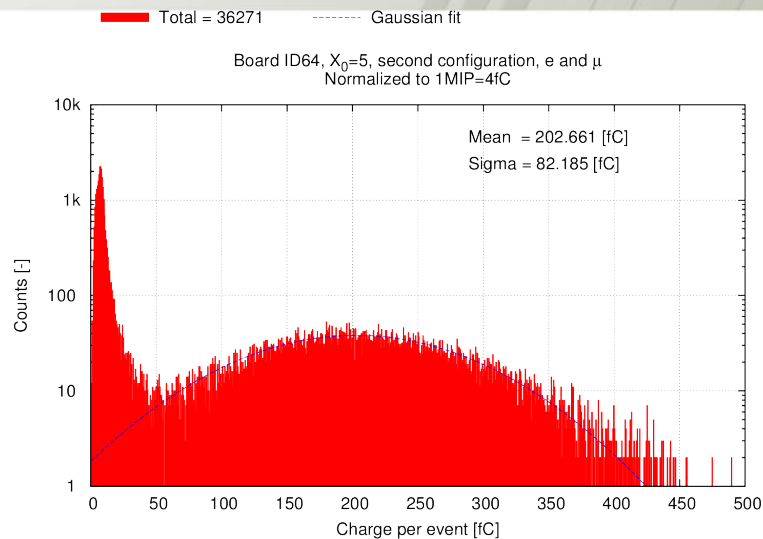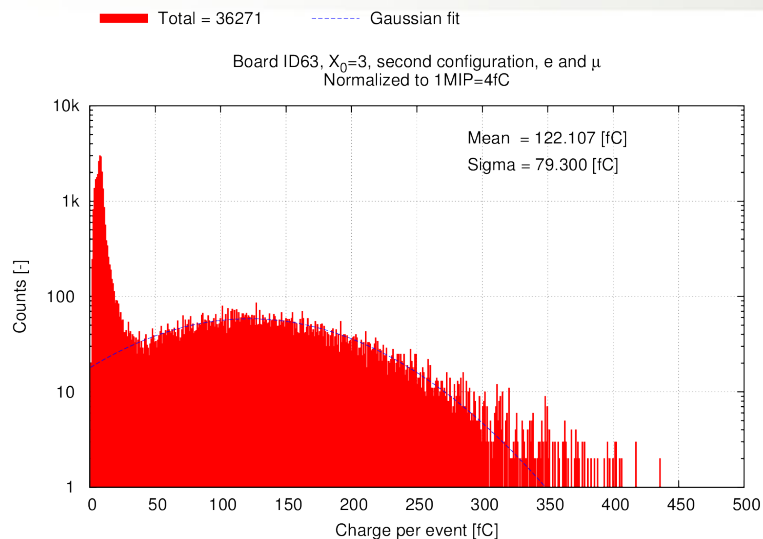
Shower development – most probable charge deposition per plane

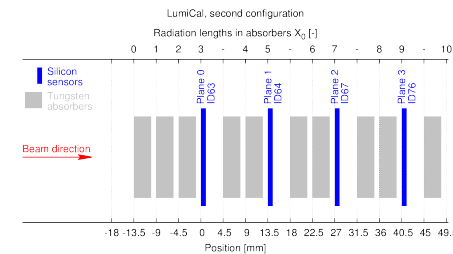First configuration □   Third configuration ◇
Second configuration △

Shower development, most probable charge deposition
Normalized to 1MIP=4fC
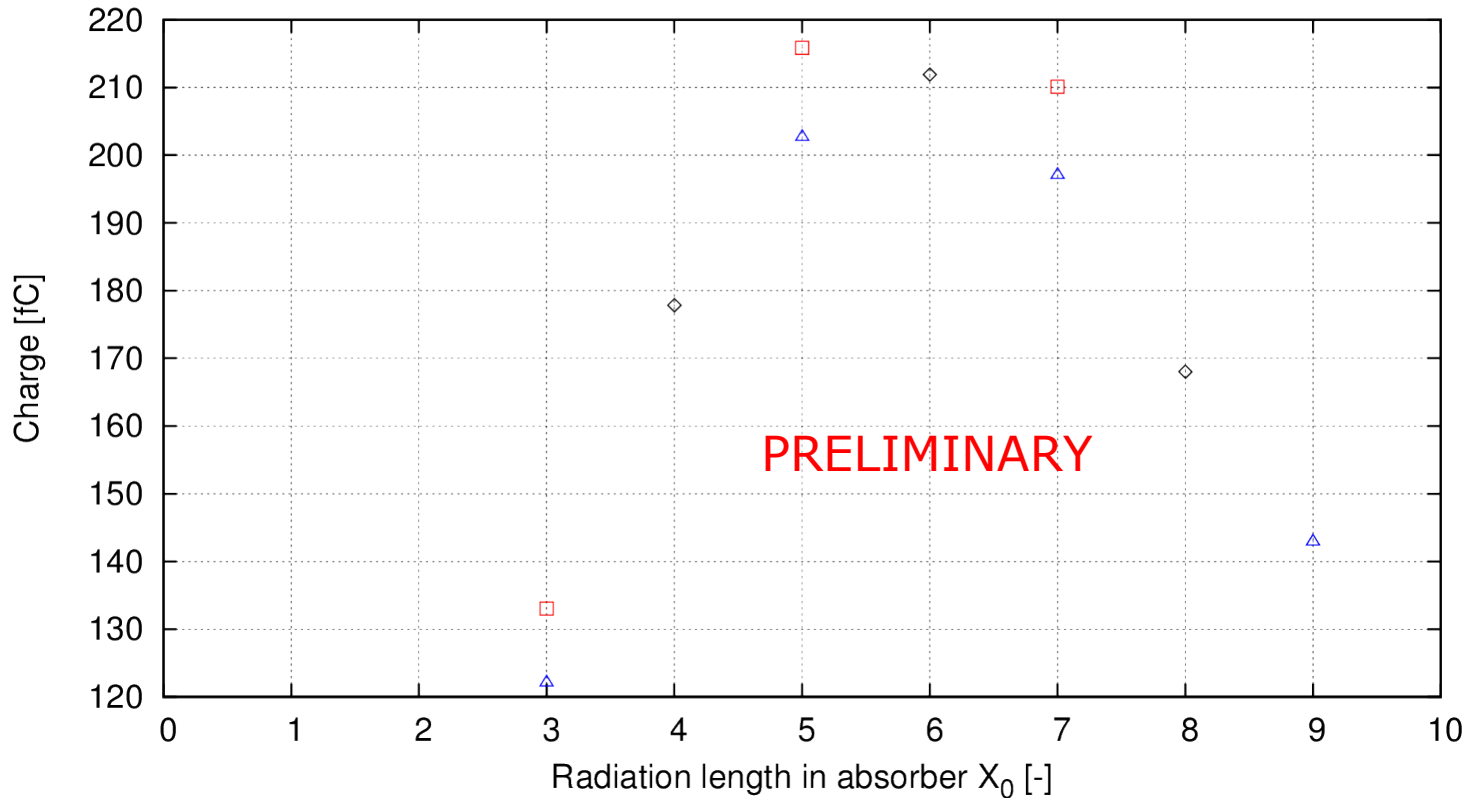
PRELIMINARY

Charge [fC] vs Radiation length in absorber X_0 [-]
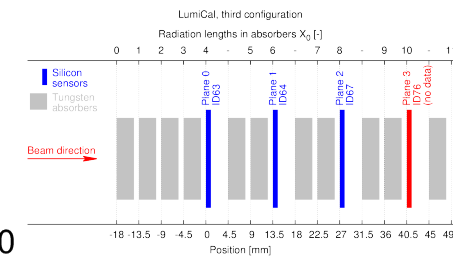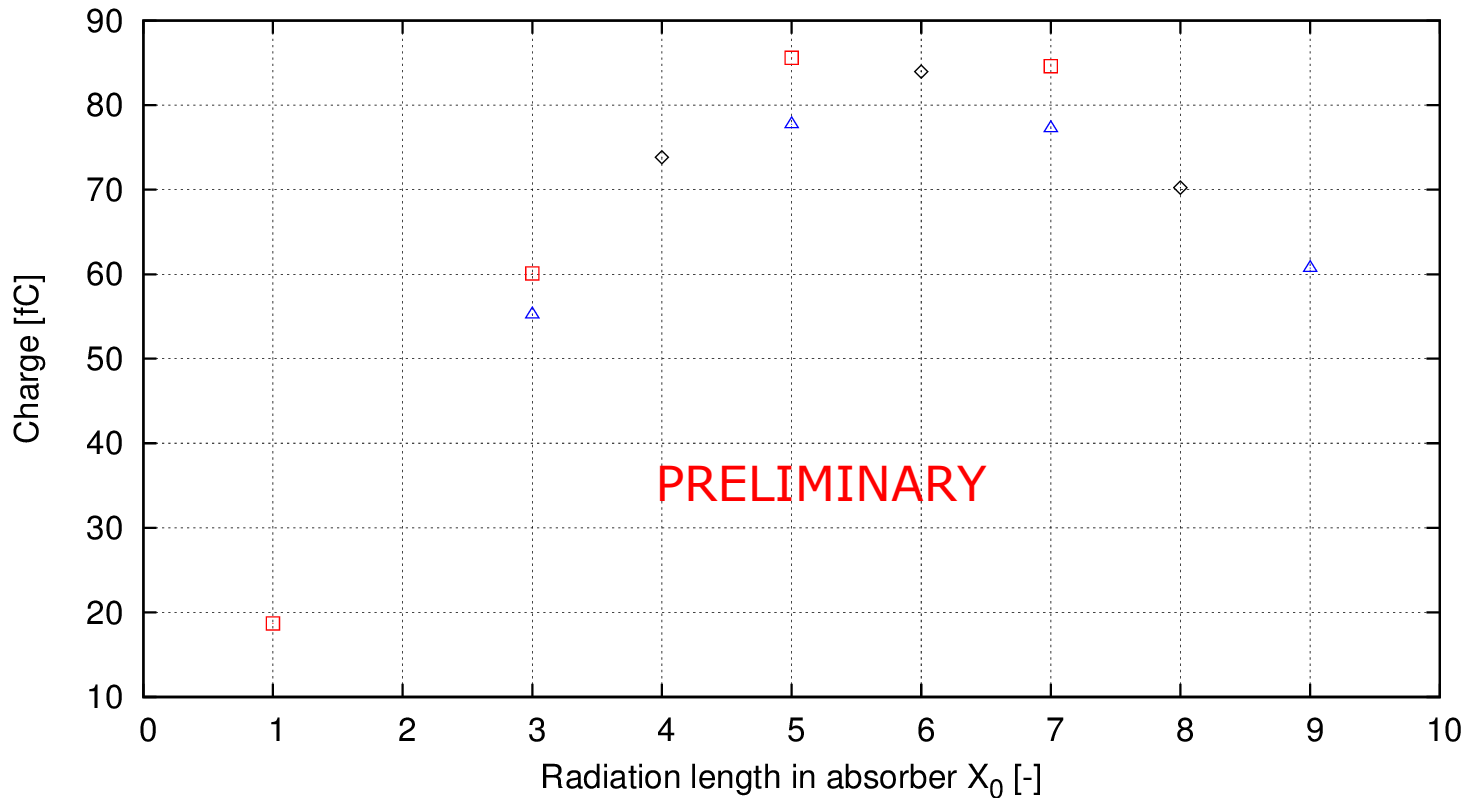
First configuration
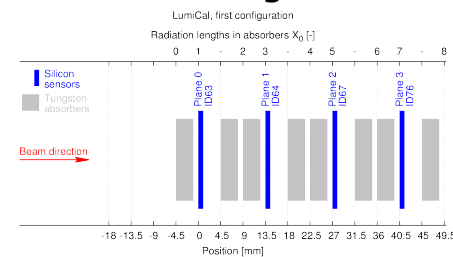
Second configuration

Third configuration

Shower development – average charge deposition per plane

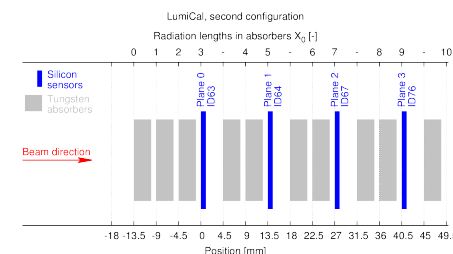First configuration ◇ Third configuration
Second configuration

Shower development, average charge
Normalized to 1MIP=4fC

PRELIMINARY

Charge [fC] vs Radiation length in absorber X_0 [-]
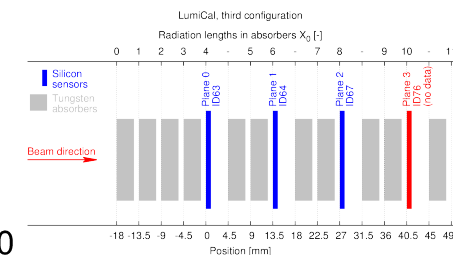
First configuration

Second configuration

Third configuration

Summary and plans

Summary
- Tracking and alignment
    - First results obtained with existing tracking and alignment are good enough
  Some tuning in close future will be probably done

- Energy measurements and shower development
    - Landau peaks and identified and used for gain tuning
    - Preliminary measurements of SNR between 6-8.5 done
    - Preliminary measurements of shower development done

Plans
Precised analysis with taking into account acceptances and other corrections to be done