



Vorbereitende Messungen zum 1. Upgrade des ATLAS Pixeldetektors

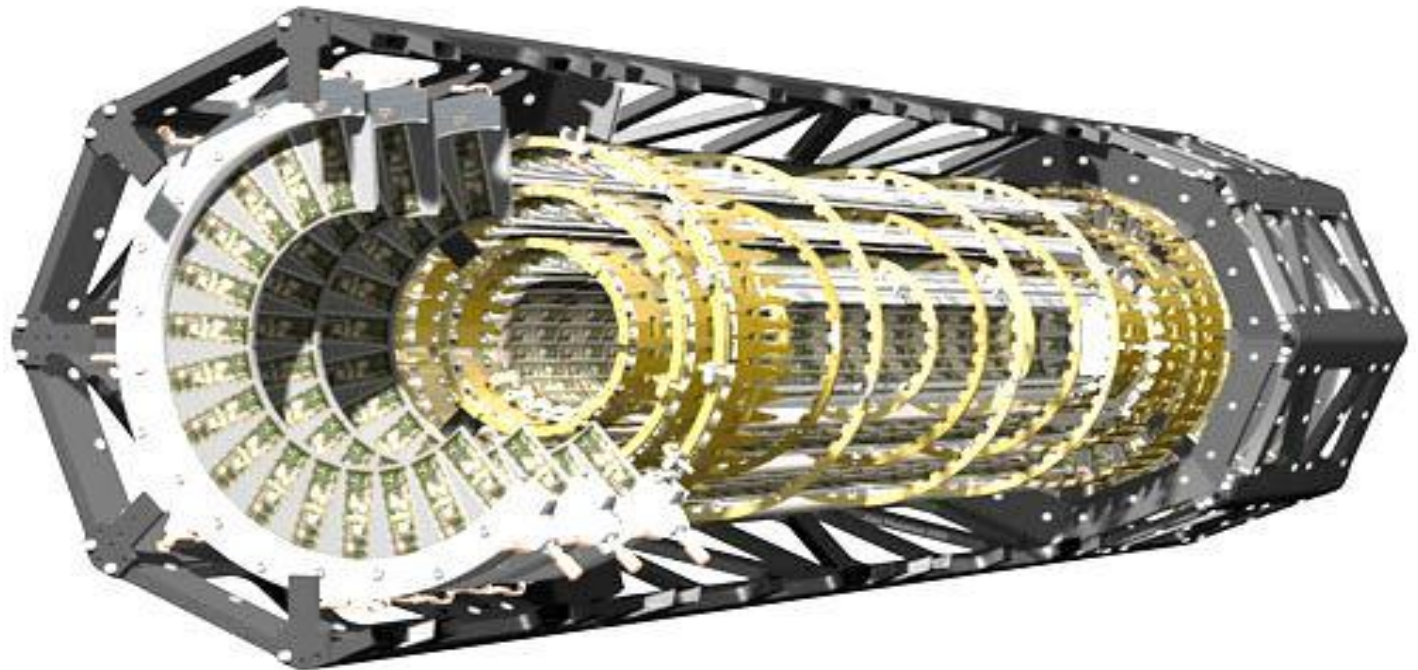
Sara Becker und Miriam Stricker

Gliederung

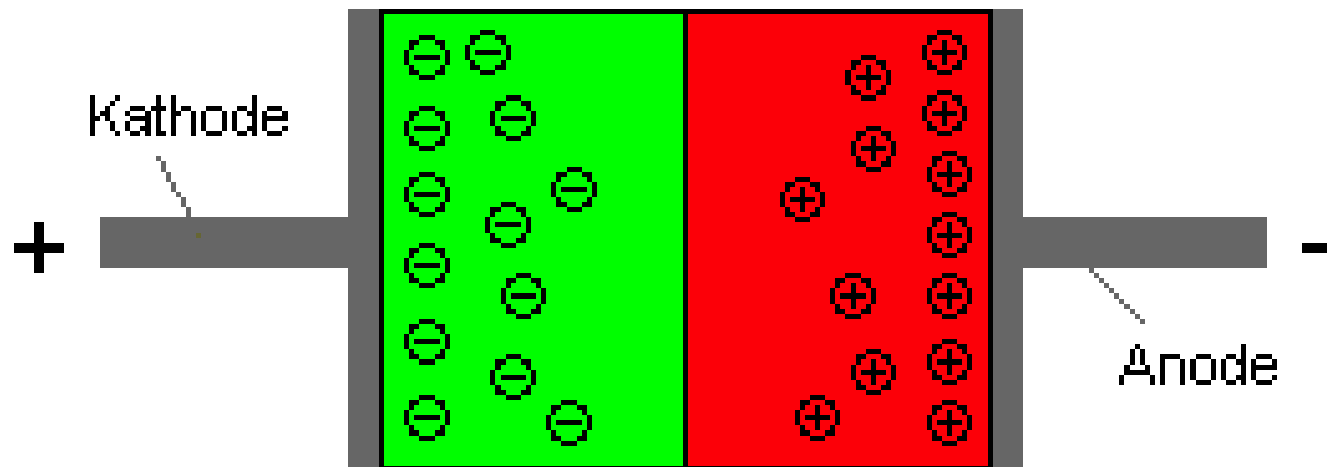
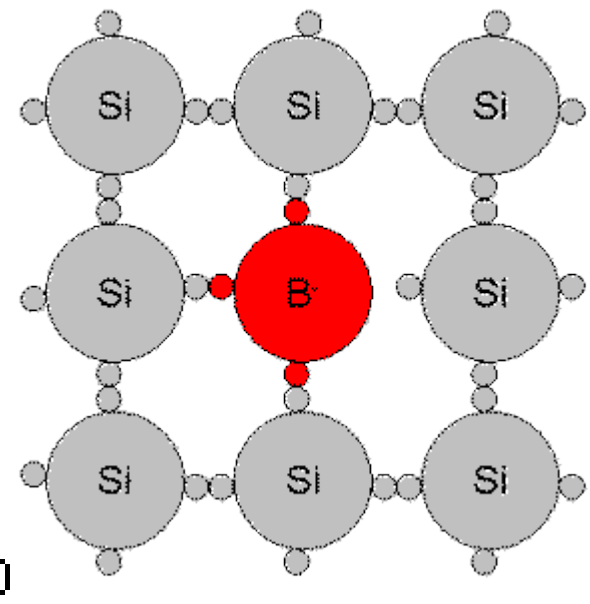
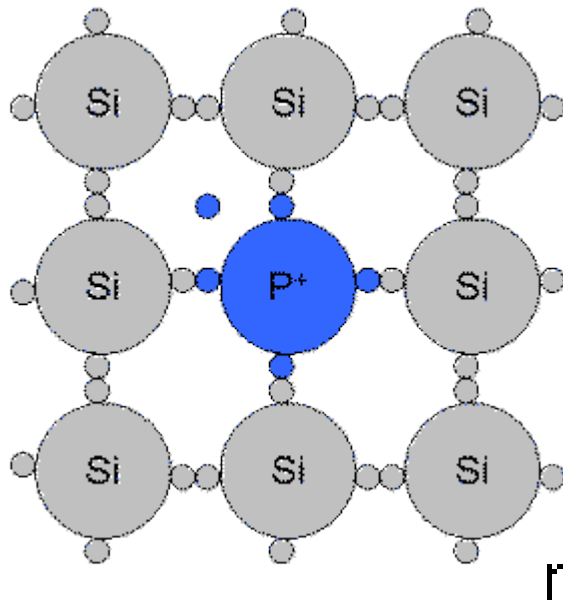
- Der ATLAS – Pixeldetektor
- Upgrade: Insertable B-layer (IBL)
- Unser Praktikum

Der ATLAS- Pixeldetektor

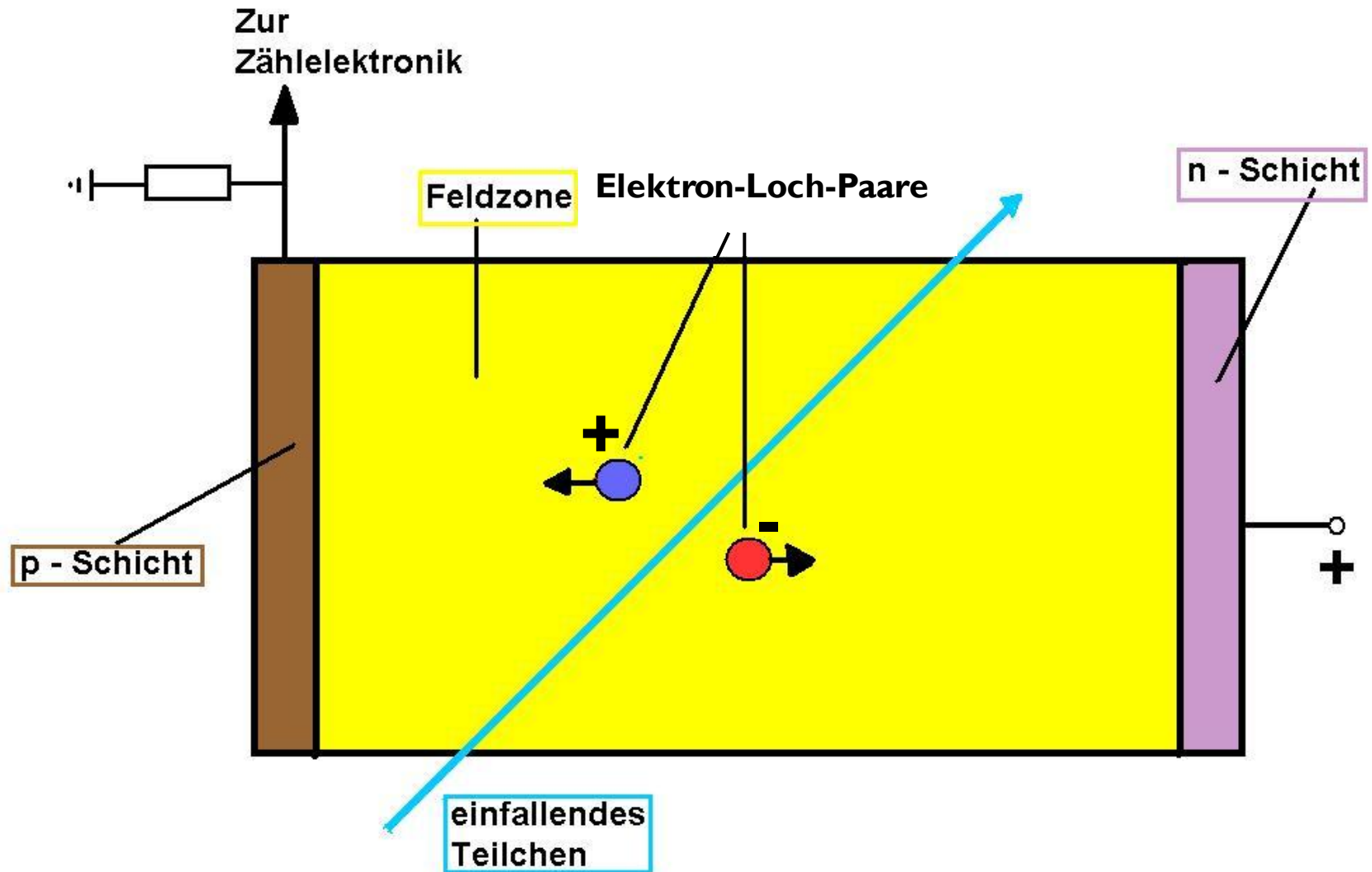
- Halbleiterdetektor
- Hohe Strahlenbelastung



Halbleiter



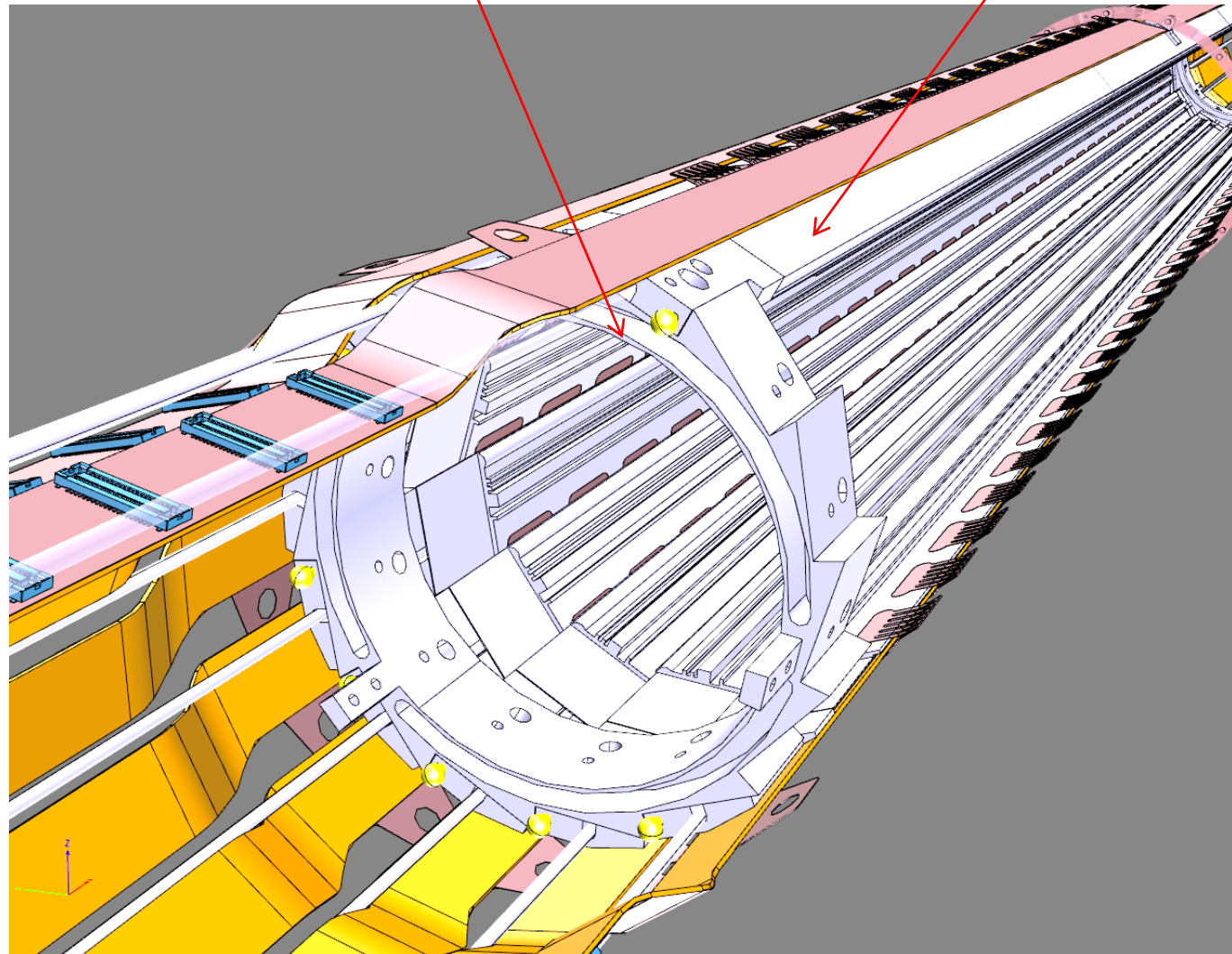
Halbleiterdetektor



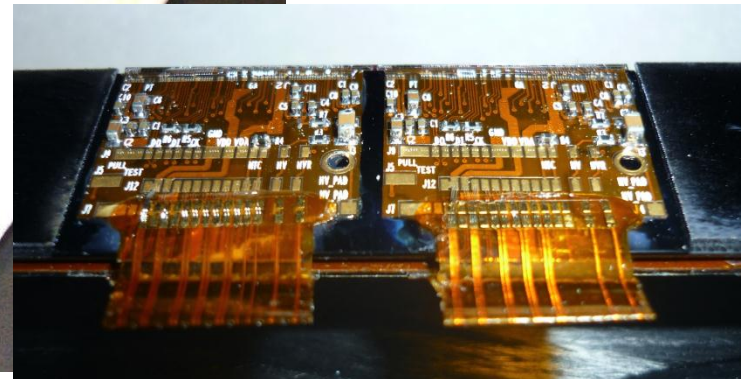
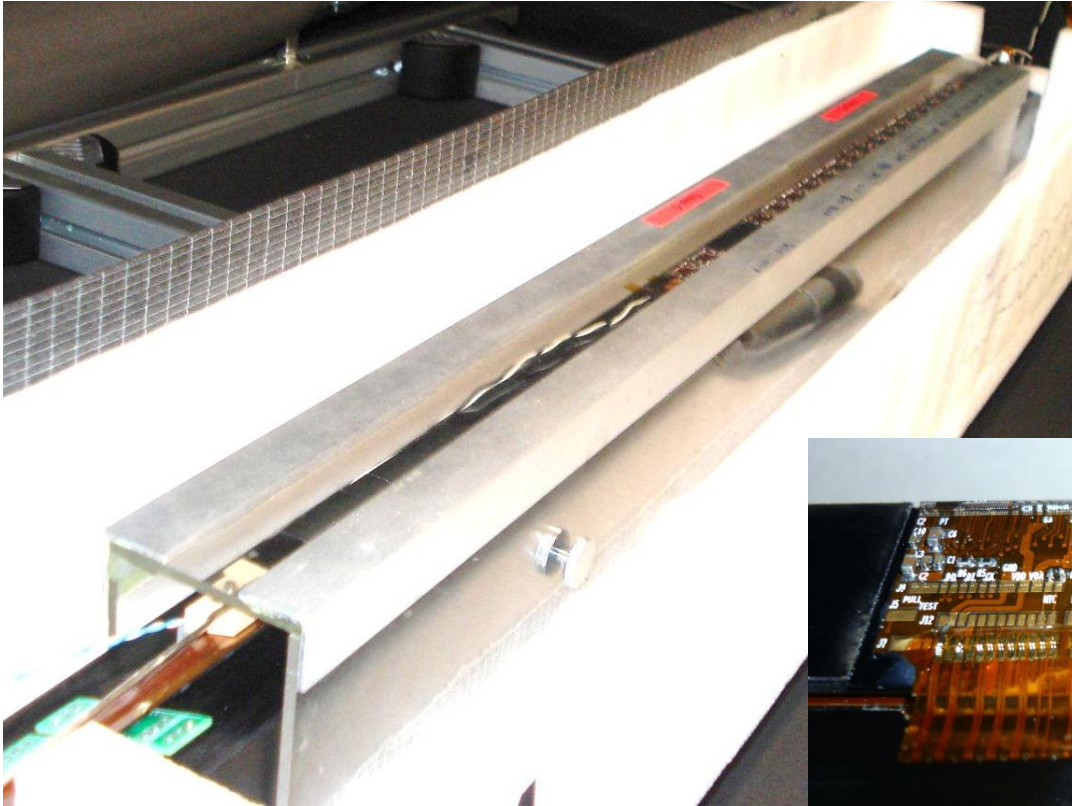
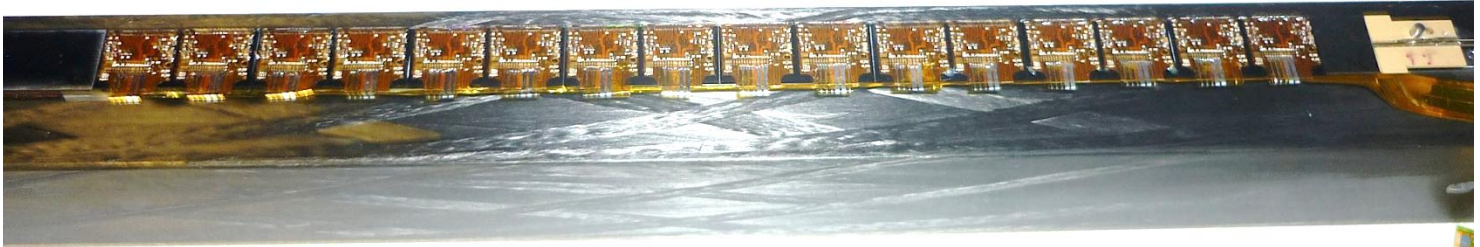
IBL

Support

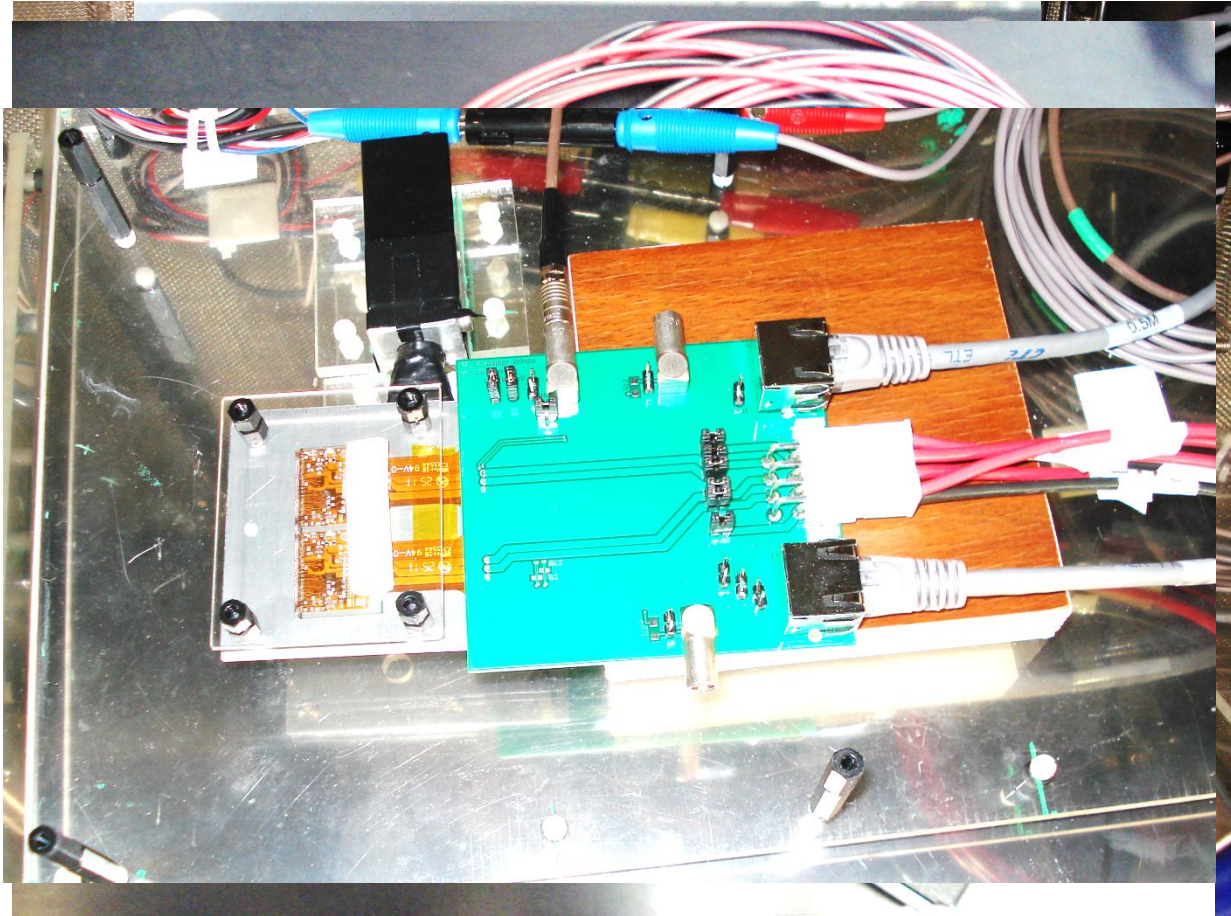
Stave



Staves



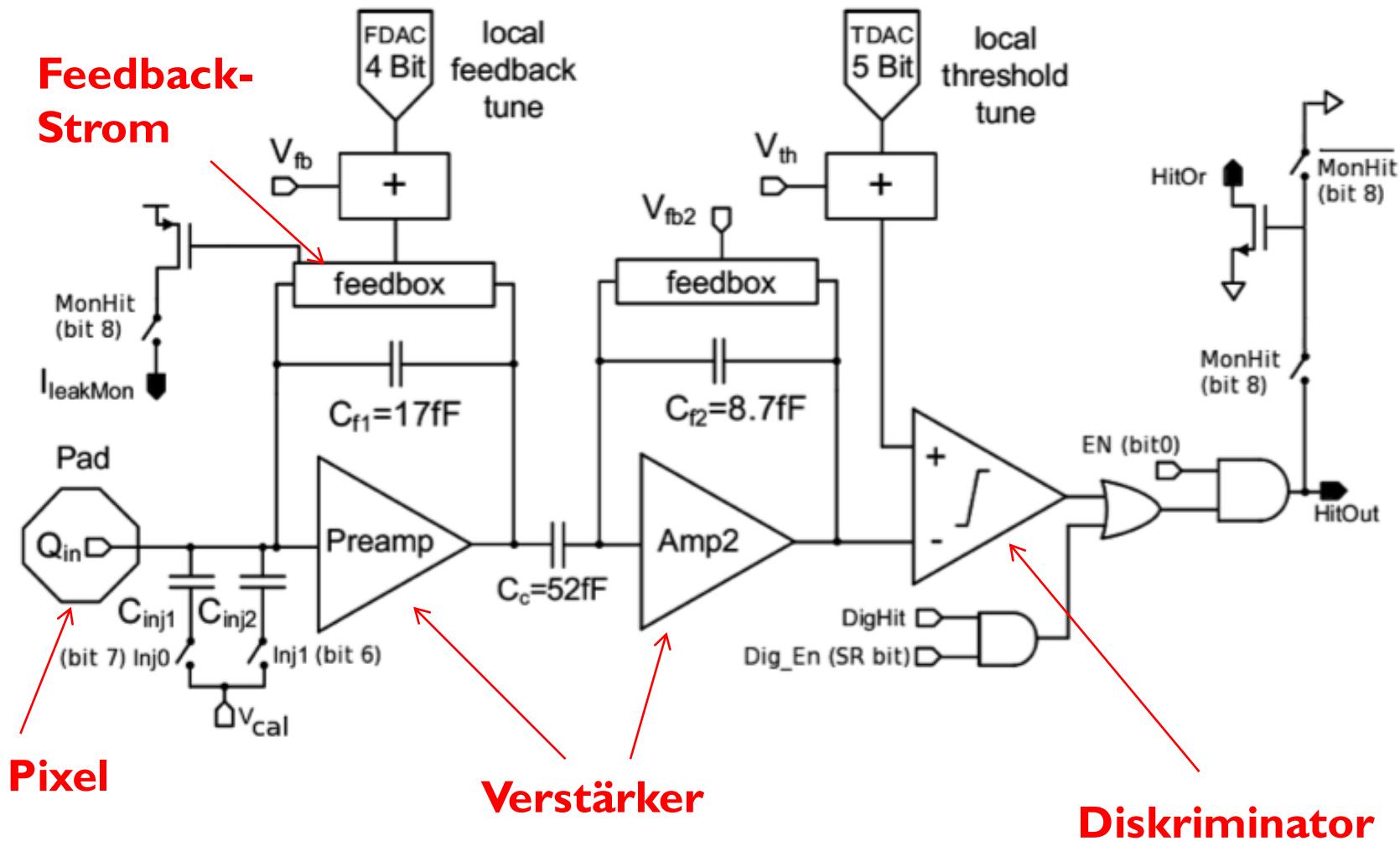
I. Woche: Production Quality Assurance



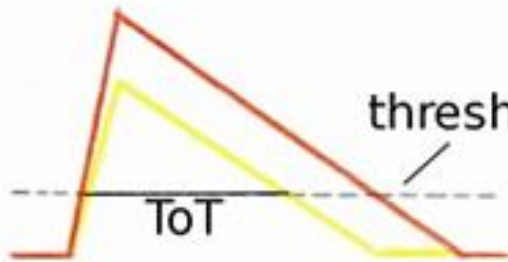
2. Woche:



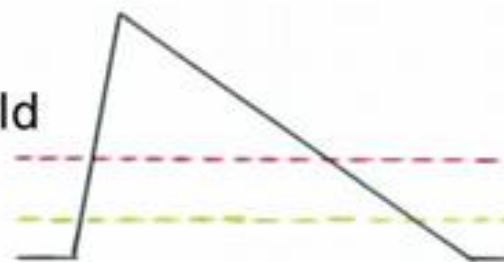
Pixelzelle (Analogteil)



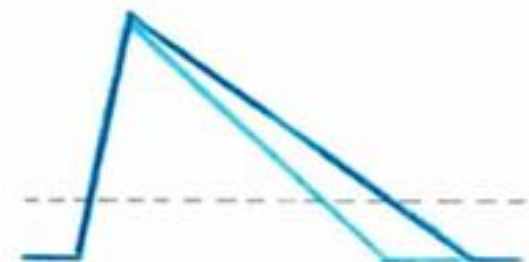
injected charge dependence



threshold dependence



feedback current dependence



preamplifier output signal
discriminator output signal



— high charge
— low charge

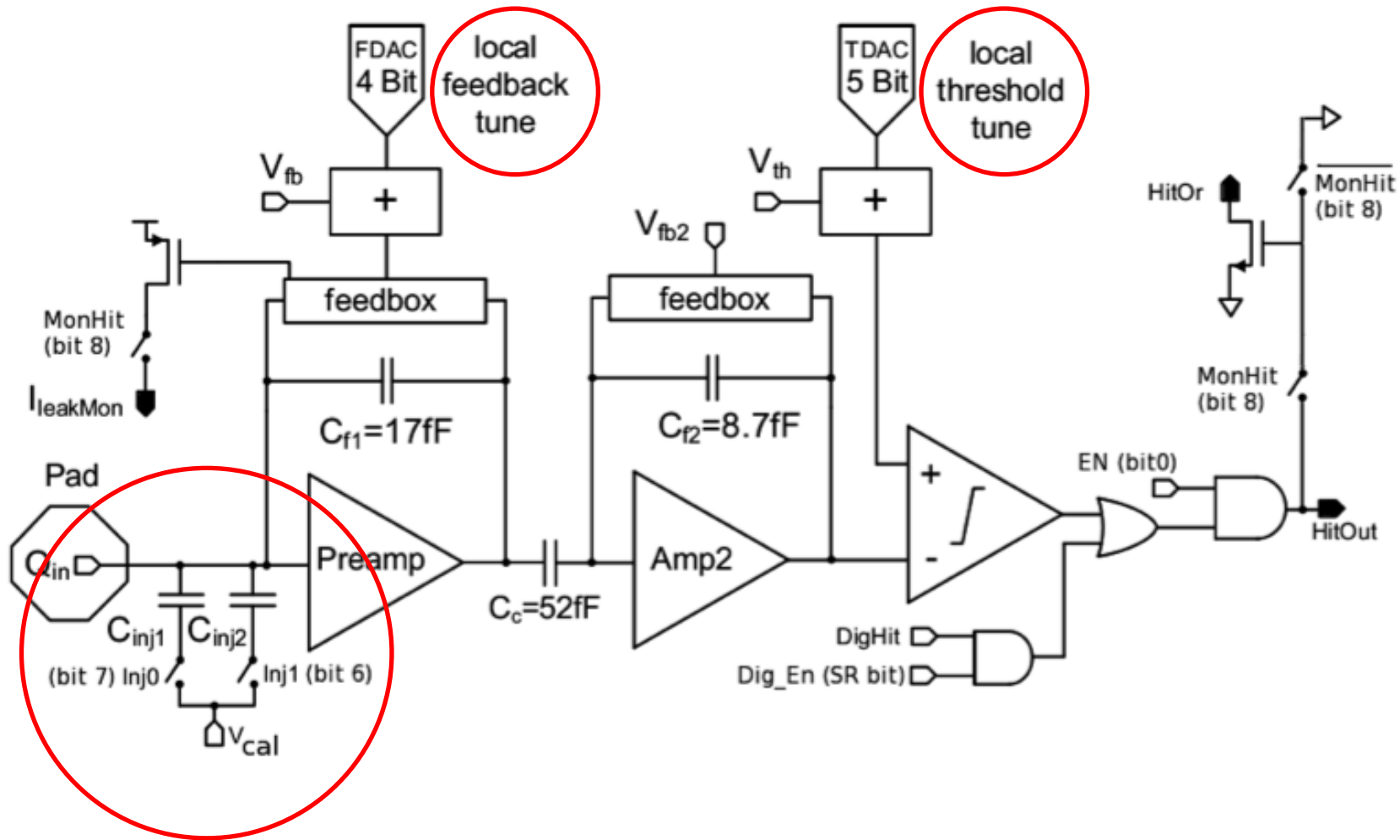


— high threshold
— low threshold

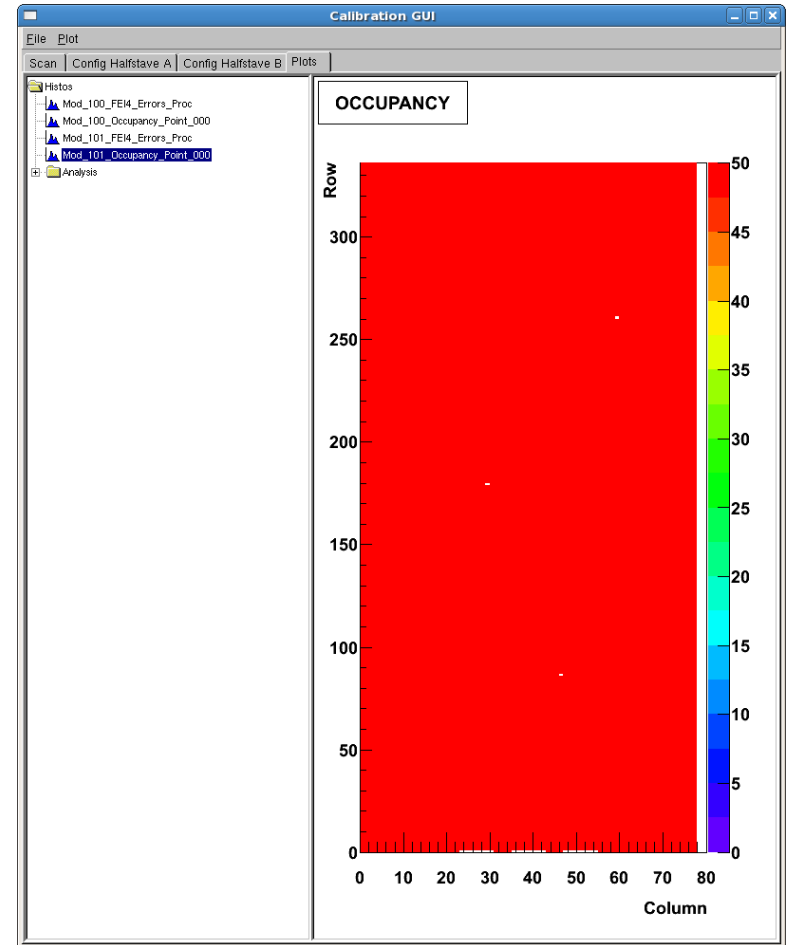
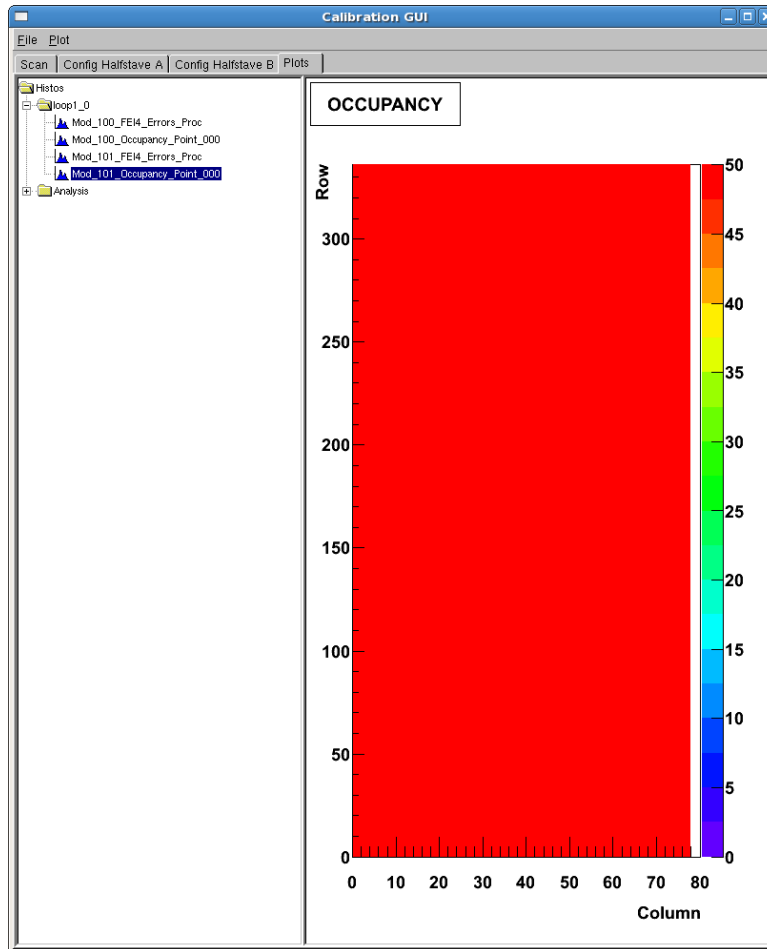


— high feedback
— low feedback

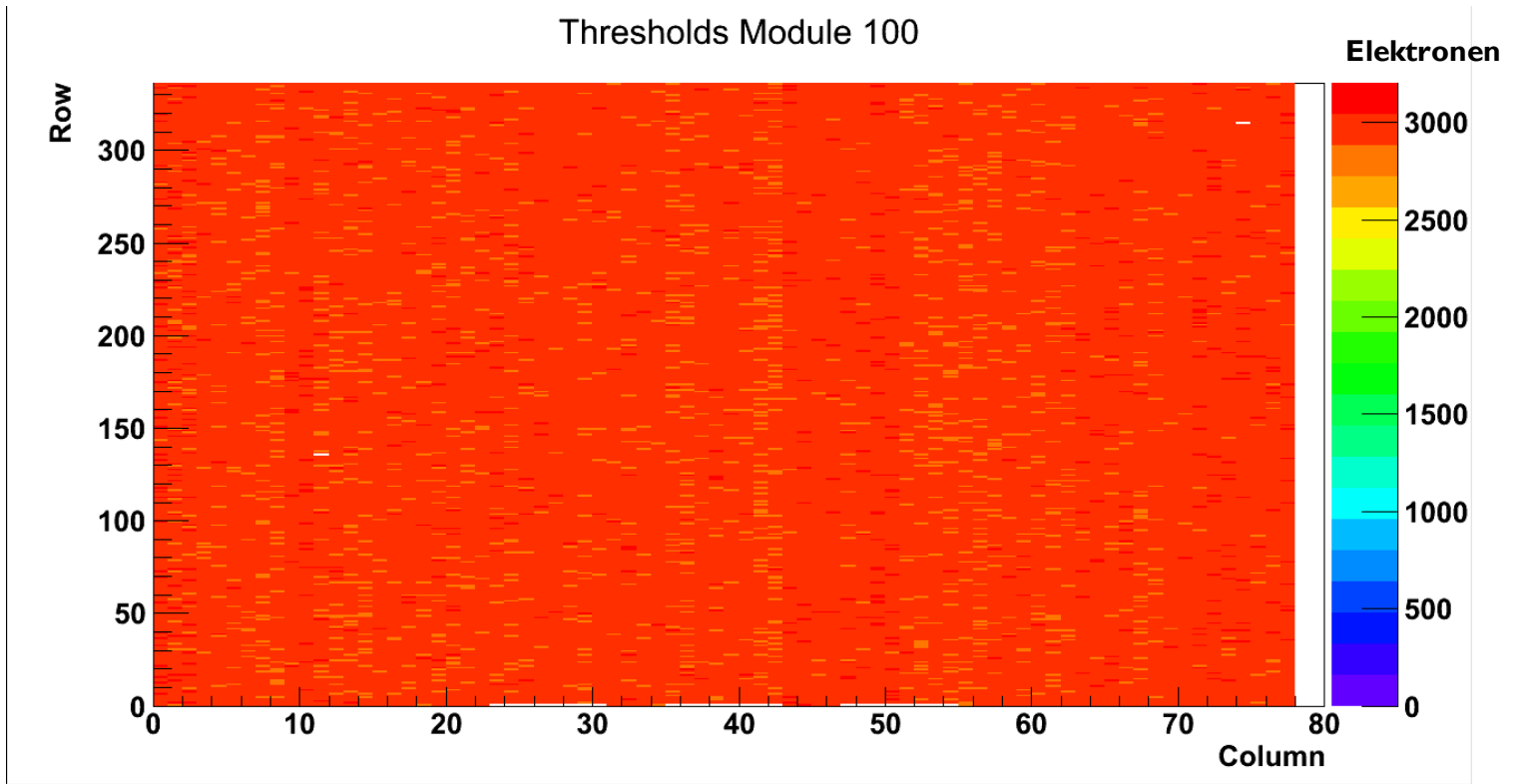
Tunes



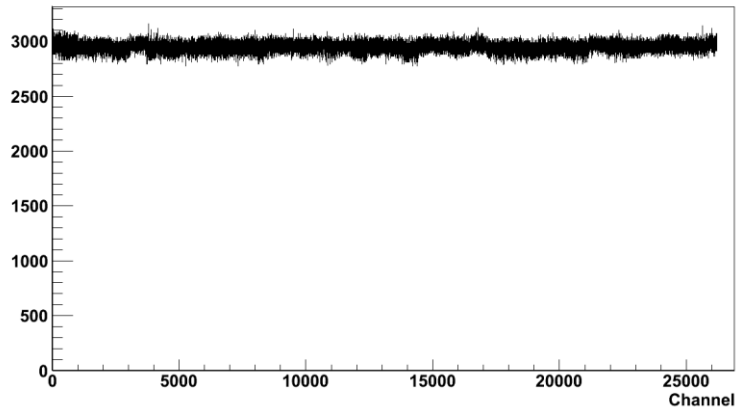
Digital- und Analogscan



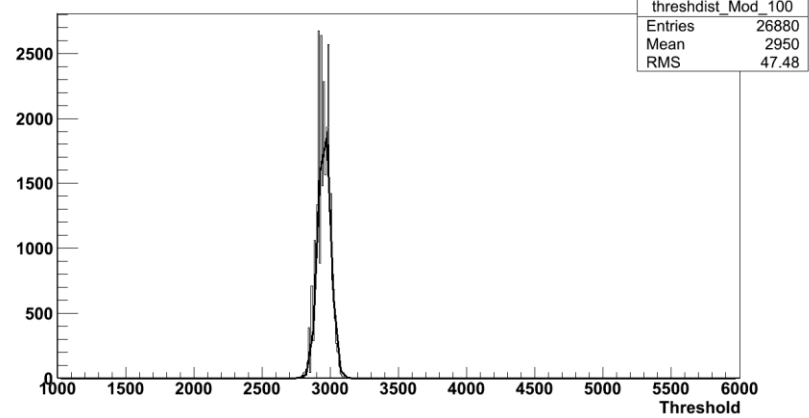
Thresholds Module 100



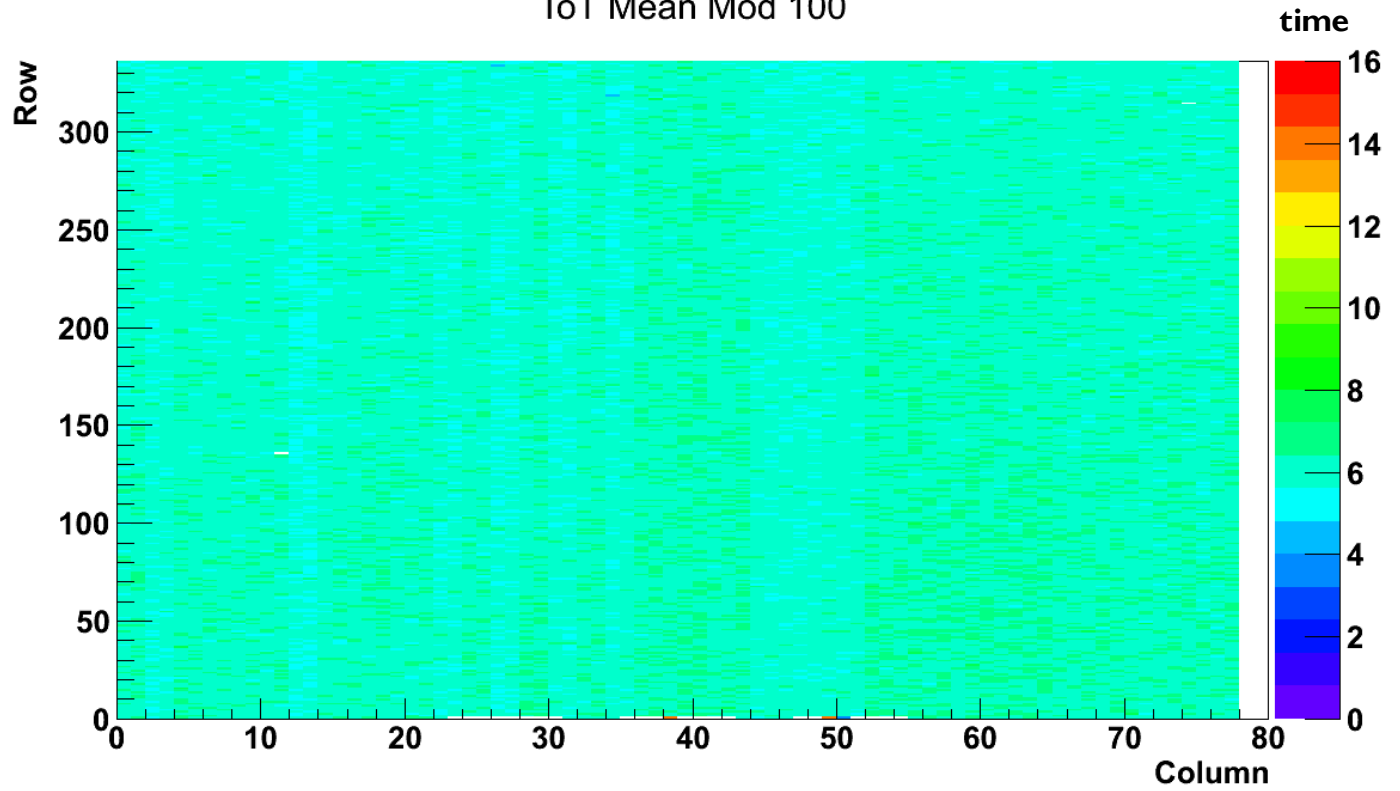
Thresholds Module 100



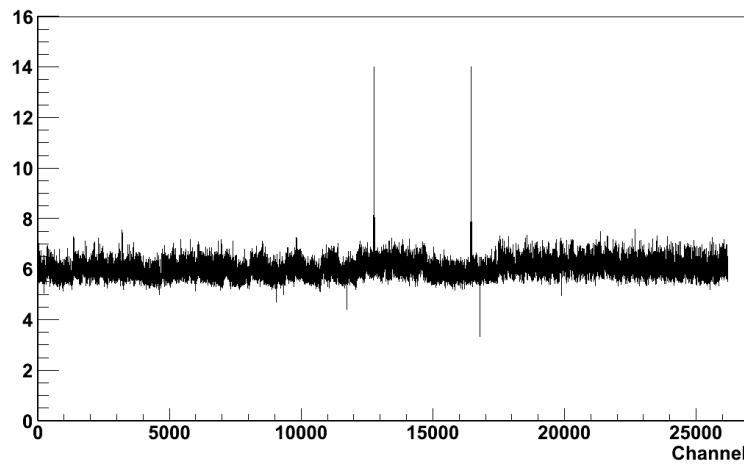
Threshold distribution Module 100



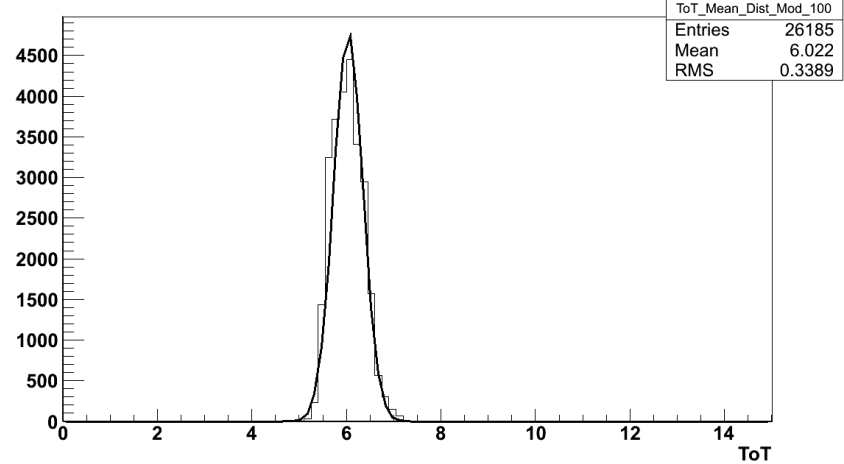
ToT Mean Mod 100



ToT Mean Mod 100



ToT Distribution Mod 100



Dokumentation

A2

- A2-0 : 101
- A2-1 : 100

[Hide module data](#)

Plots:

- Digital:
 - [Mod 100 Digital-Scan 201](#)
 - [Mod 101 Digital-Scan 203](#)
- Analog:
 - [Mod 100 Analog-Scan 202](#)
 - [Mod 101 Analog-Scan 202](#)
- Threshold (tuned):
 - [Mod 100 thresh1d 212](#)
 - [Mod 100 threshdist 212](#)
 - [Mod 100 sigma1d 212](#)
 - [Mod 100 sigmadist 212](#)
 - [Mod 101 thresh1d 212](#)
 - [Mod 101 threshdist 212](#)
 - [Mod 101 sigma1d 212](#)
 - [Mod 101 sigmadist 212](#)
- ToT (tuned):
 - [Mod 100 Mean Dist 213](#)
 - [Mod 101 Mean Dist 213](#)

Files:

- Digital Scan: [MA2_Digital_Test_214.root](#)
- Analog Scan: [MA2_Analog_Test_215.root](#)
- Threshold Scan: [MA2_Threshold_Scan_216.root](#)
- ToT Scan: [MA2_Tot_Test_217.root](#)
- Tuned Config: [A2-config.tar.gz](#)

Module Characterization

Parameters:

- Temperature: Set to 10°C
- Low voltage: 1.4 V (Analog + Digital)
- Target Threshold: 3000
- Target charge: 10k
- Target [ToT](#): 6

Prim List:

- Initial:
 - Digital Scan
 - Analog Scan
- Tuning:
 - If tune
 - GDAC tune
 - If tune
 - GDAC tune
 - FDAC tune
 - TDAC tune
 - FDAC tune
 - TDAC tune
- Scan
 - Threshold Scan
 - [ToT](#) Scan



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Quellen

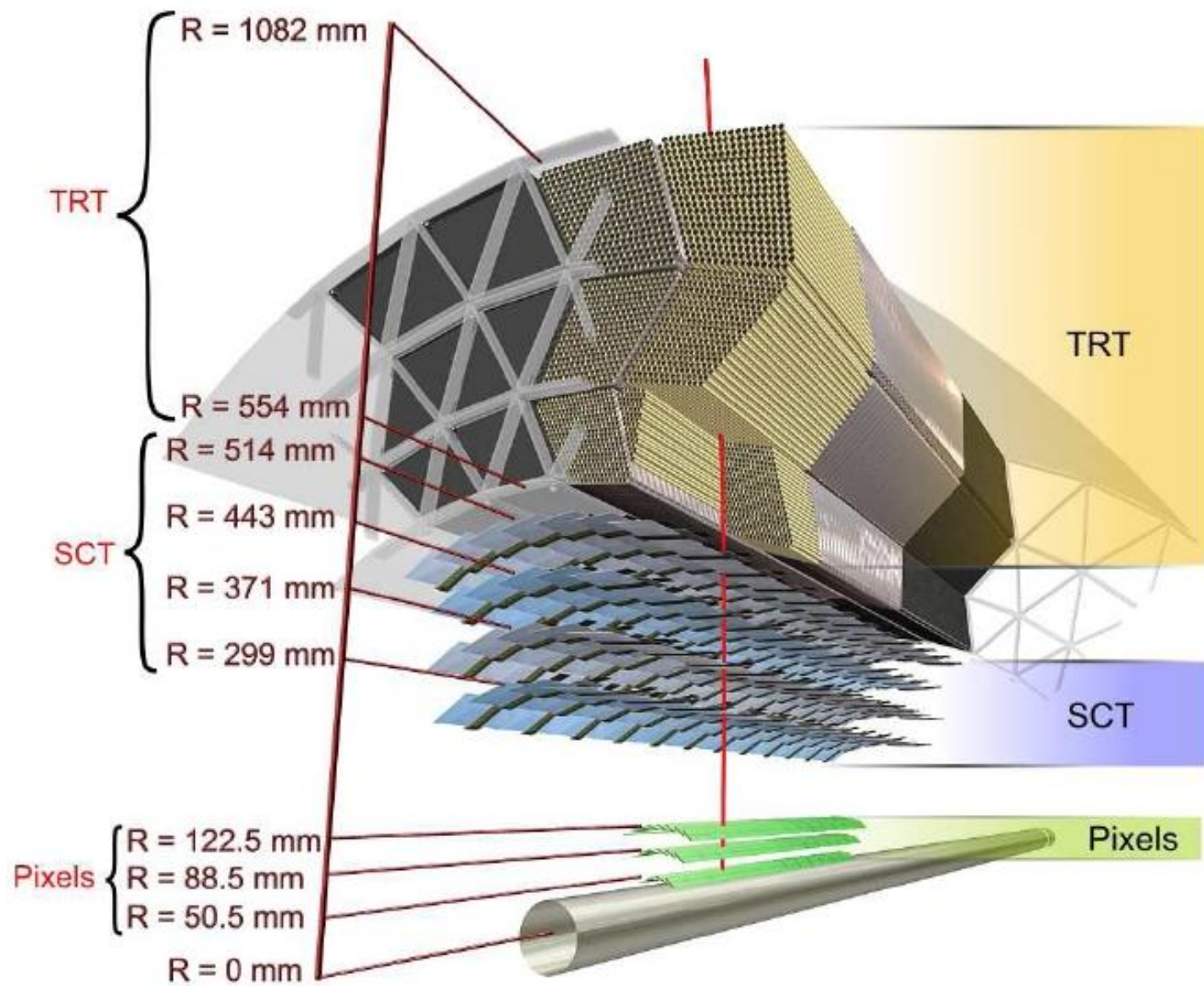
- http://www.e4.physik.tu-dortmund.de/cgi-bin/twiki/viewfile/E4/Diplomarbeiten?rev=1;filename=dip_lom_jjentsch.pdf; 24.04.2012
- http://www.atlas.uni-wuppertal.de/~heim/tmp/diploma_thesis.pdf; 25.04.2012
- <http://gerhardkemme.blogspot.com/2010/05/synchrotron-detektoren.html>; 24.04.2012
- <http://daten.didaktikchemie.uni-bayreuth.de/umat/ccd/ccd-detektor.htm>; 24.04.2012
- <http://www.bibianatroost.de/Webcard/elektronik/index.html?bauteile/diode/halbleiterdiode/diode.html>; 24.04.2012



Backup

Scans

- Parameters: Temperature: Set to 10°C
- Low voltage: 1.4V (Analog + Digital)
- Target Threshold: 3000
- Target charge: 10k
- Target [ToI](#): 6
- Prim List:
- Initial:
 - Digital Scan
 - Analog Scan
- Tuning:
 - If tune
 - GDAC tune
 - If tune
 - GDAC tune
 - FDAC tune
 - TDAC tune
 - FDAC tune
 - TDAC tune
- Scan
 - Threshold Scan
 - [ToI](#) Scan



The ATLAS detector

