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**Collaboration Meeting  
MVD session  
GSI, November 29, 2010**

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# **Updated full-scale count rate studies**



# General comments

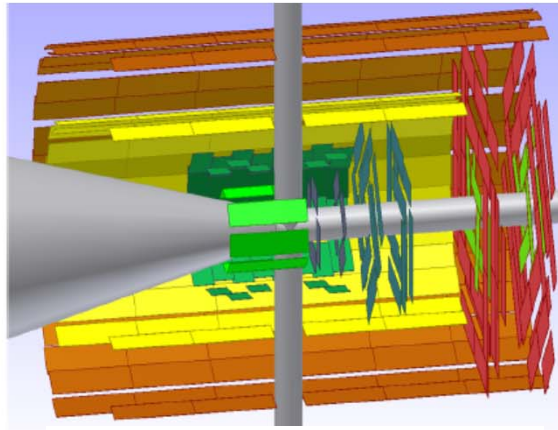


- Previous studies compiled in Panda-note 004.1
- What's new?
  - Studies performed with full-fledge model Mvd-2.1
  - Exact handling of elastic events
  - Updated digitization
  - Precise geometrical description down to lowest level
    - Pixel part: Enlarged pixel cells at rim of frontend
    - Strip part: Ganging of long strips of barrels sensors
  - High statistical sample

# What's new?

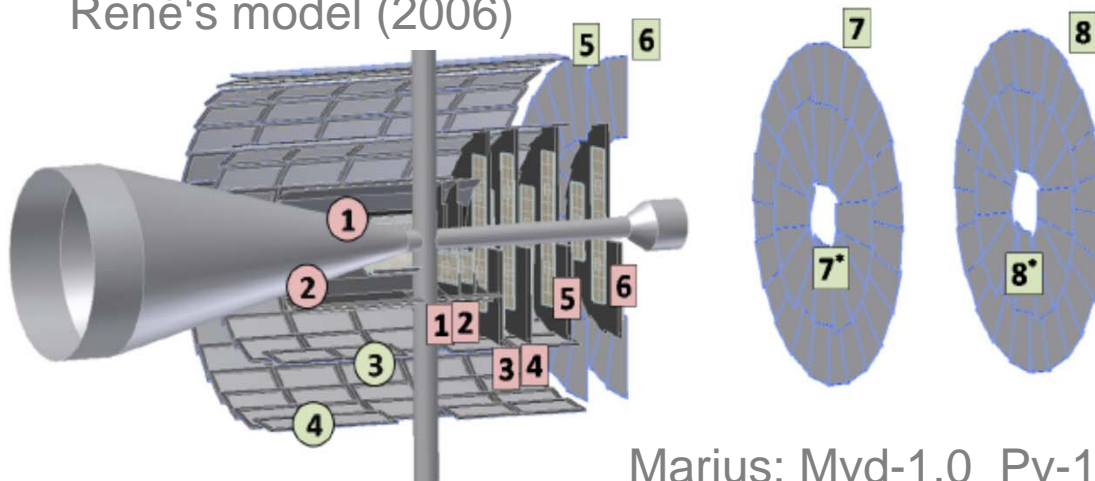
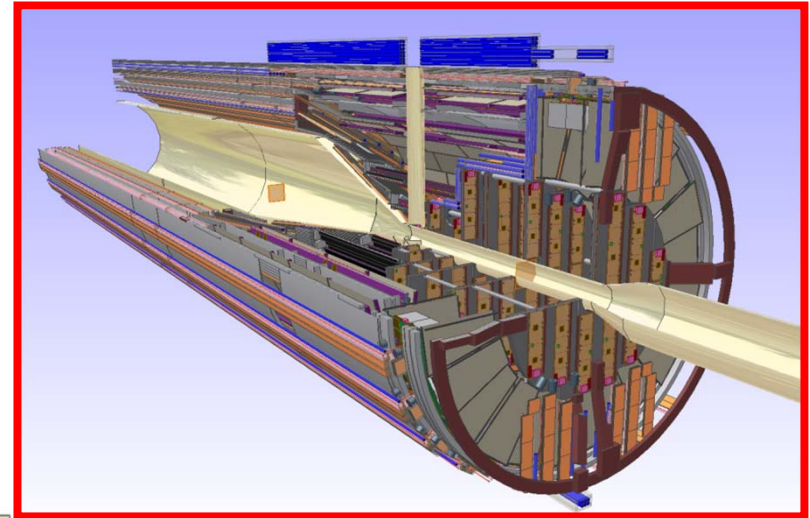


- Previous studies compiled



René's model (2006)

in  
Panda-note  
004.1



Marius: Mvd-1.0\_Pv-1.0\_Sv-1.0(2008)

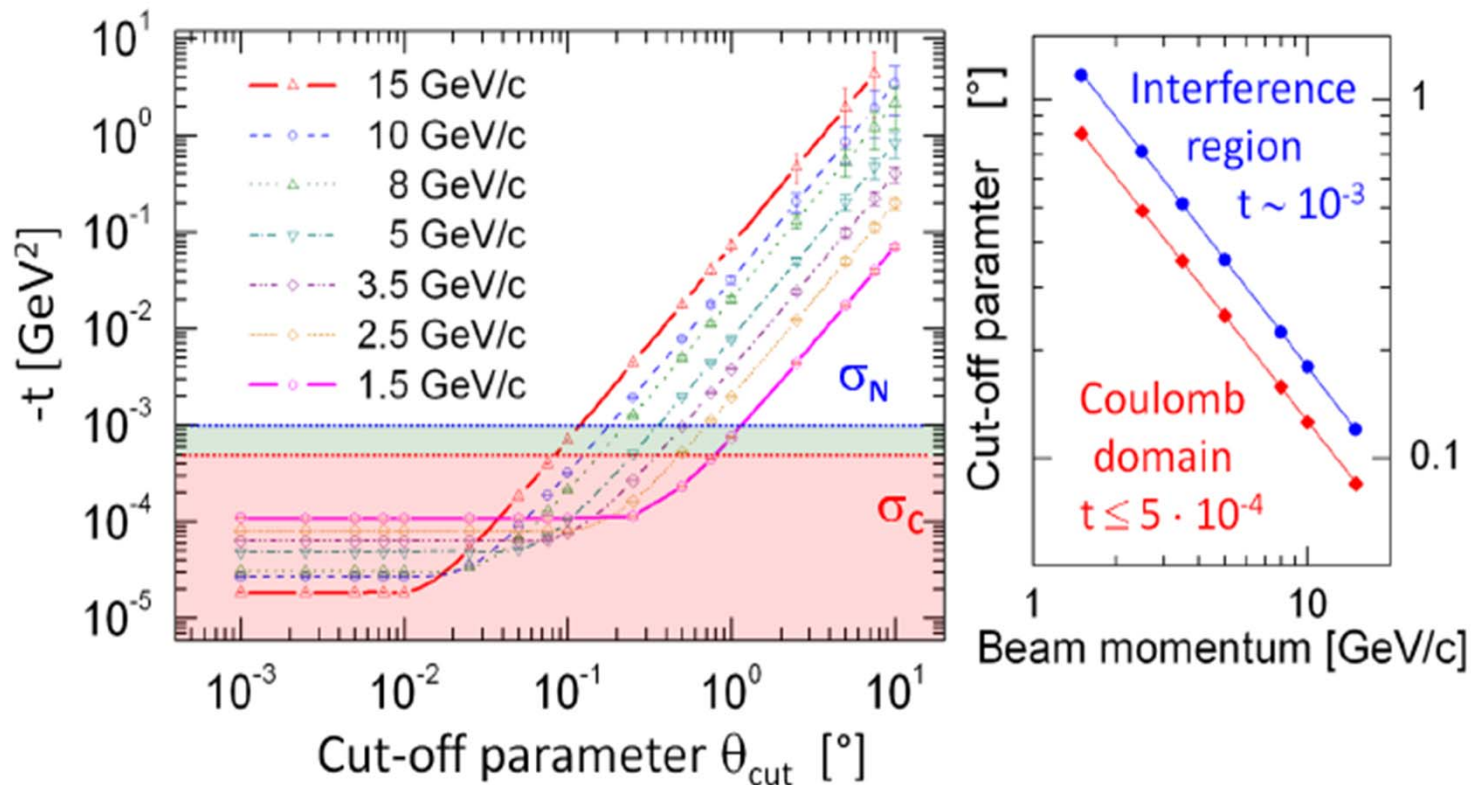
**New studies:  
Mvd-2.1\_FullVersion  
(2010)**

# What's new?



- Exact handling of DPM elastic events

- Parameterization for cut-off parameter



# Simulation

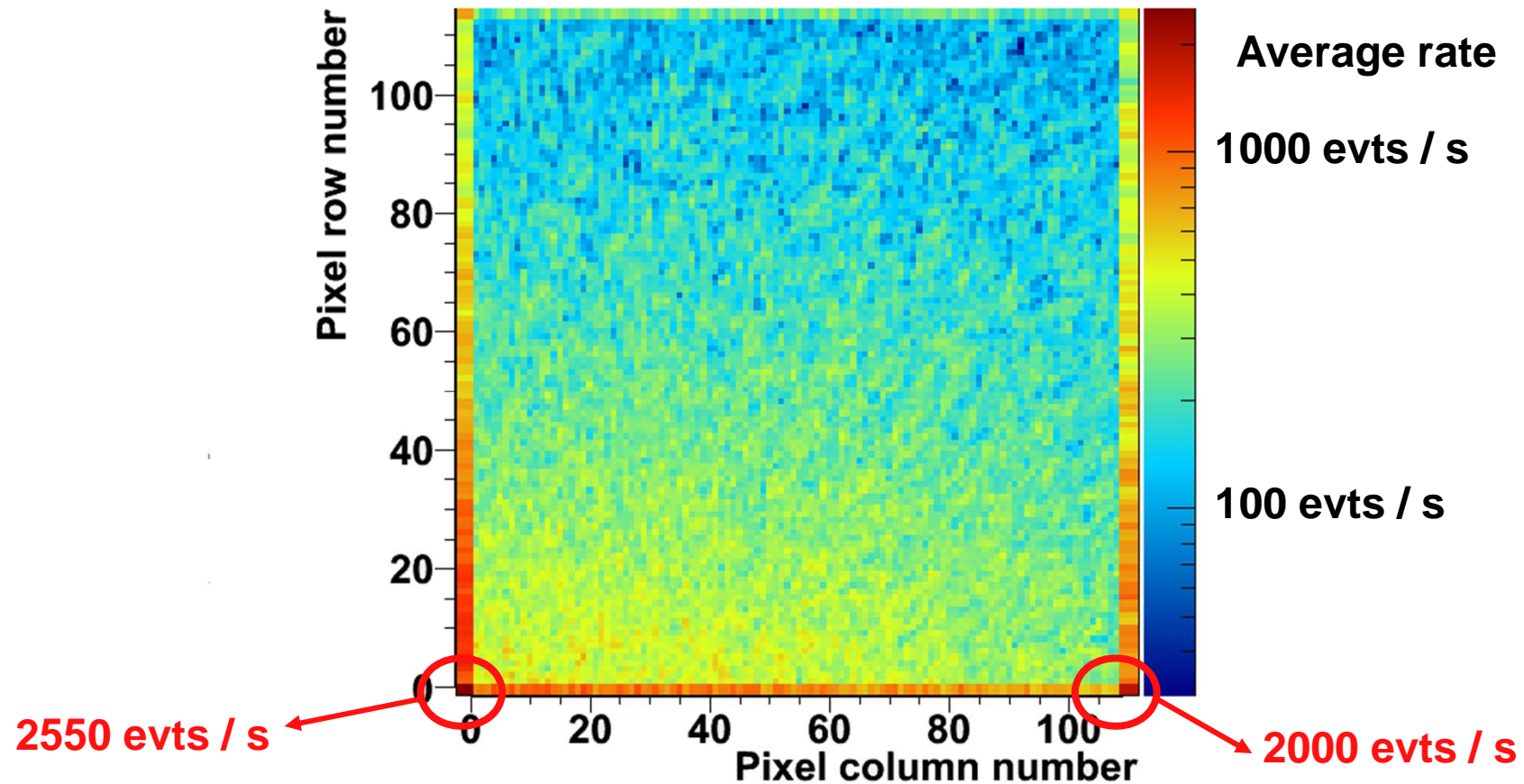


- 2 million DPM events: antiproton-proton
  - Beam energy: 15 GeV/c, 5 GeV/c, 1.5 GeV/c
  - Full Mvd-2.1 model included
  - Digitization:
    - Charge generation along track
    - Projection on readout structure
    - No noise but threshold value
    - Rectangular and trapezoidal shape respected
- ... Remark: still old conventions used for pixel.  
Local actualisation: pixel matrix, frontend matrix

# Results



- Distribution on **pixel frontend** with maximum rate:  
Location: First small disk. 4-chip size module



# Results



- Distribution on **strip frontend** with maximum rate:

Average rate

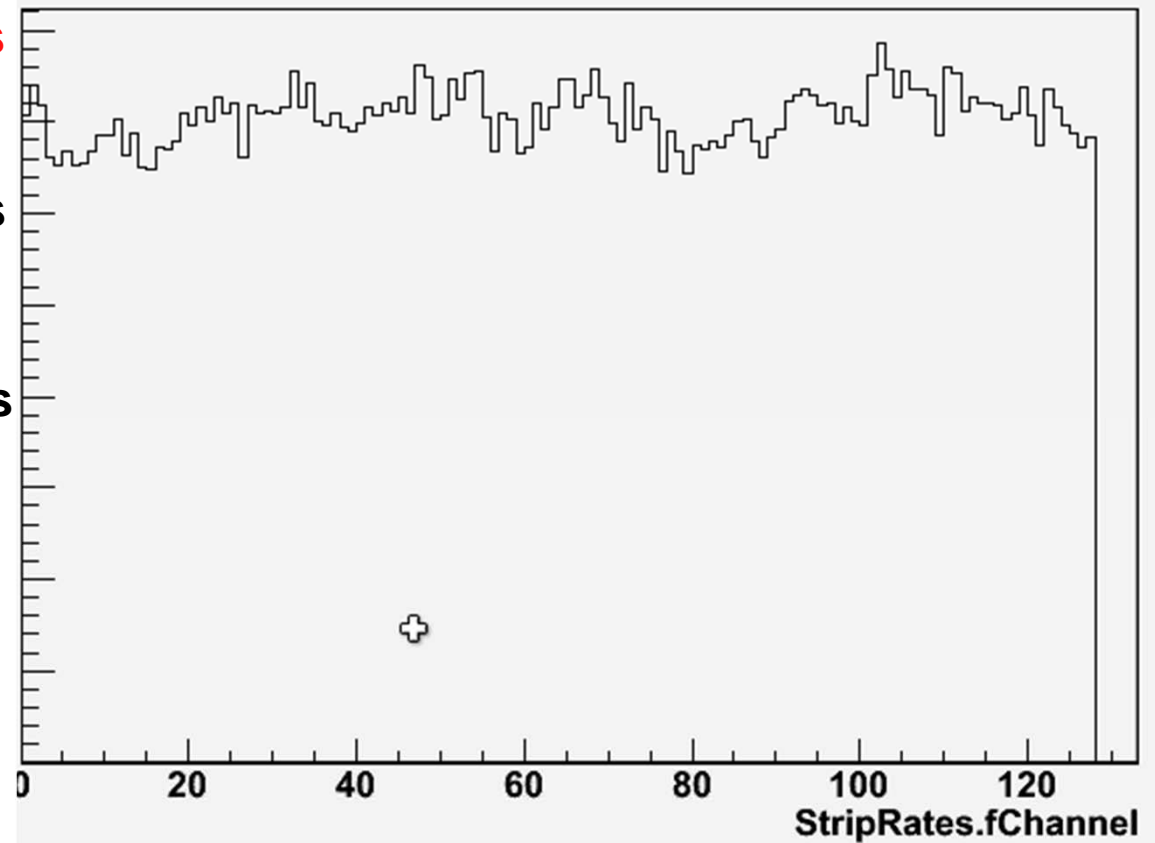
Location:  
Ganged  
long strips,  
barrel 3  
upstream  
module

8 kevt/s

6 kevt/s

4 kevt/s

2 kvts / s

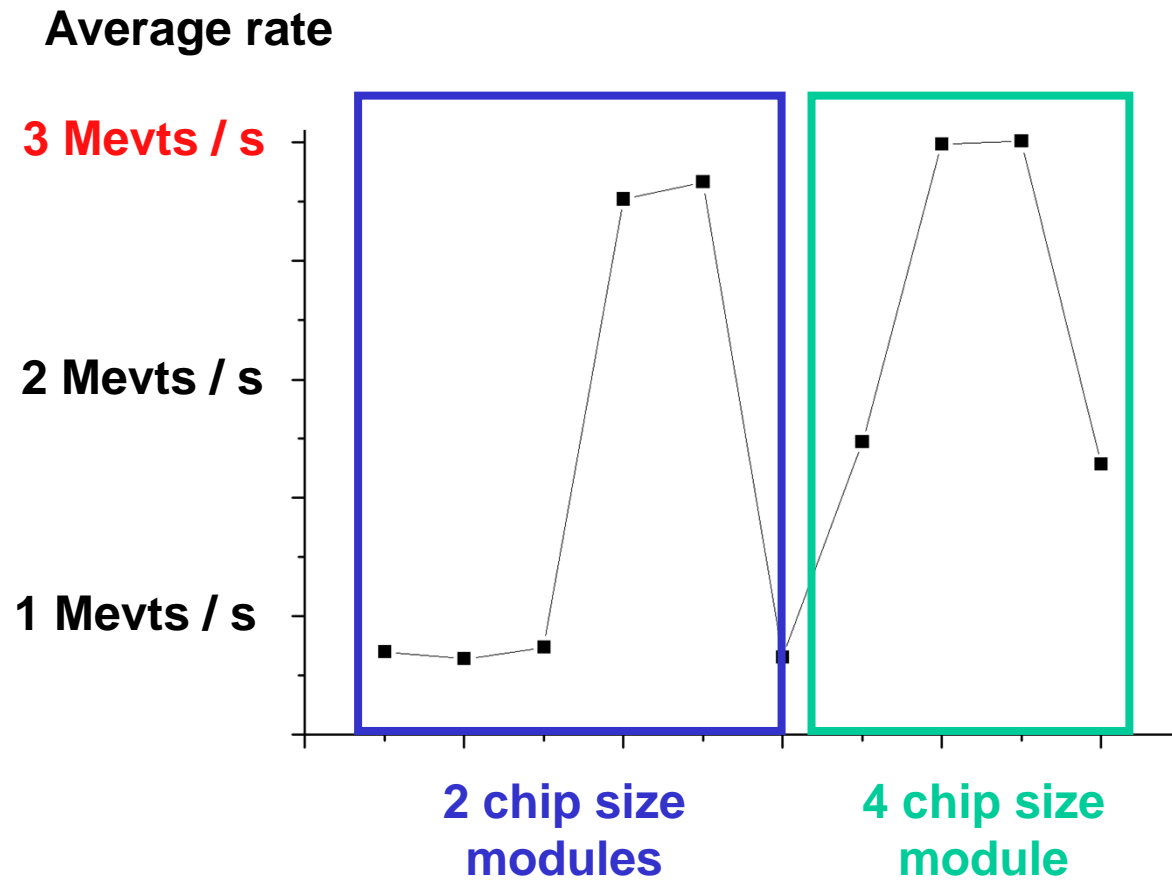


# Results



- Maximum **pixel frontend** rates:

Location:  
First  
small  
disk





# Results

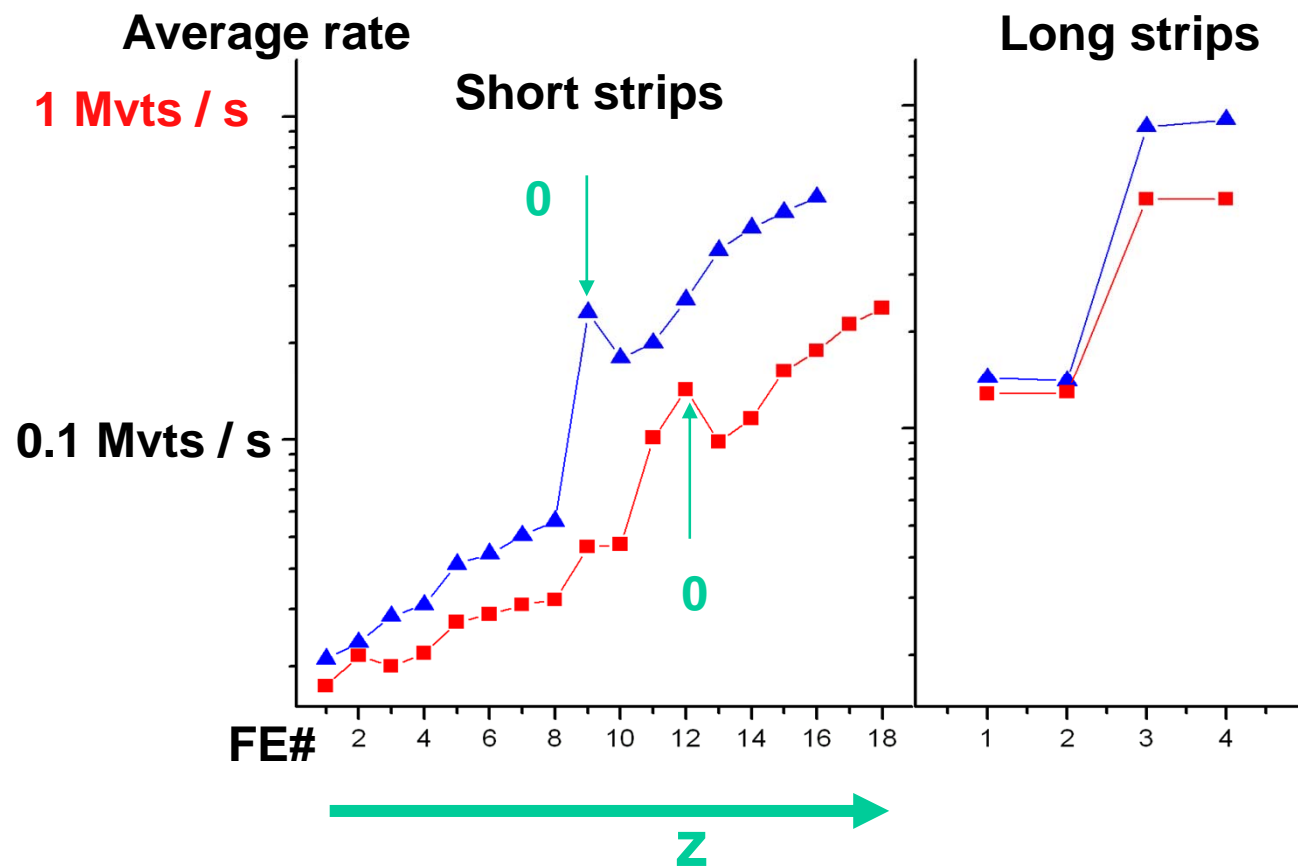


- Strip frontend rates:

Barrel  
layer

Barrel 3

Barrel 4



# Results



- Strip frontend rates:

Forward  
layer  
5+6

Average rate

0.35 Mvts / s

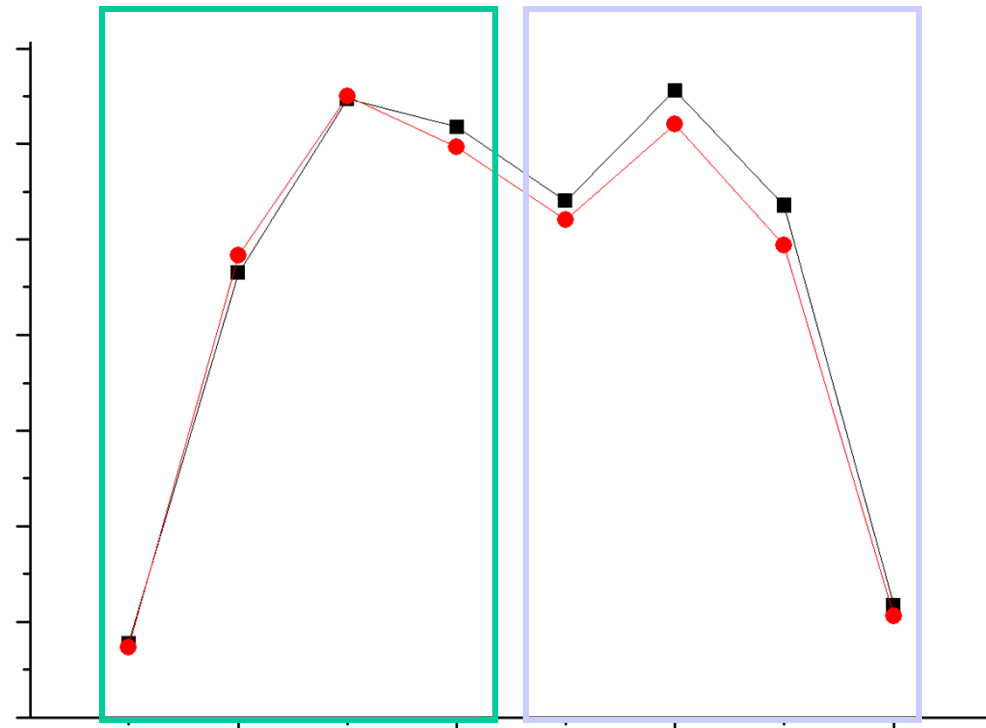
0.3 Mvts / s

0.2 Mvts / s

0.1 Mvts / s

Front

Rear



# Results



- **Averaged, integrated numbers**

Strip part: 250 Mevts / s

Pixel part: 365 Mevts / s

# Summary



- **Maximum numbers on count rates consistent with previous results**
- **However, be aware of maximum instantaneous rates...not touched here**
- **Look again at the implemented pixel digitization**
- **More results and detailed discussion in my thesis ...soon ... ;-)**