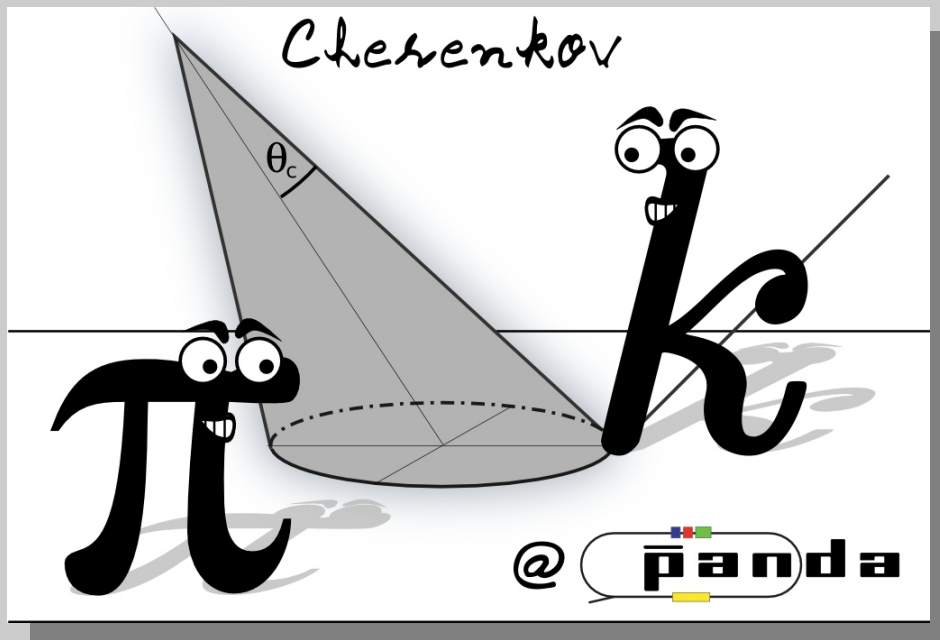


# Status of the Giessen

## DIRC activities



JUSTUS-LIEBIG-

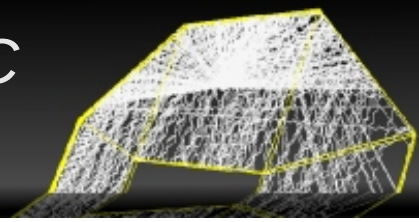


UNIVERSITÄT  
GIESSEN

GEFÖRDERT VOM



Bundesministerium  
für Bildung  
und Forschung



- **Simulation**

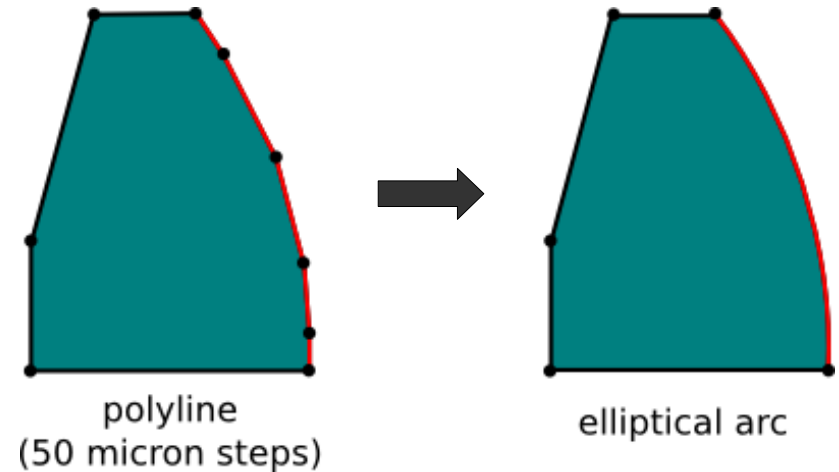
- Approximation of polynomial surface by elliptical arc

- **Update of post-processor**

- Improved pixel mapping
- + dark count model
- + dead time model

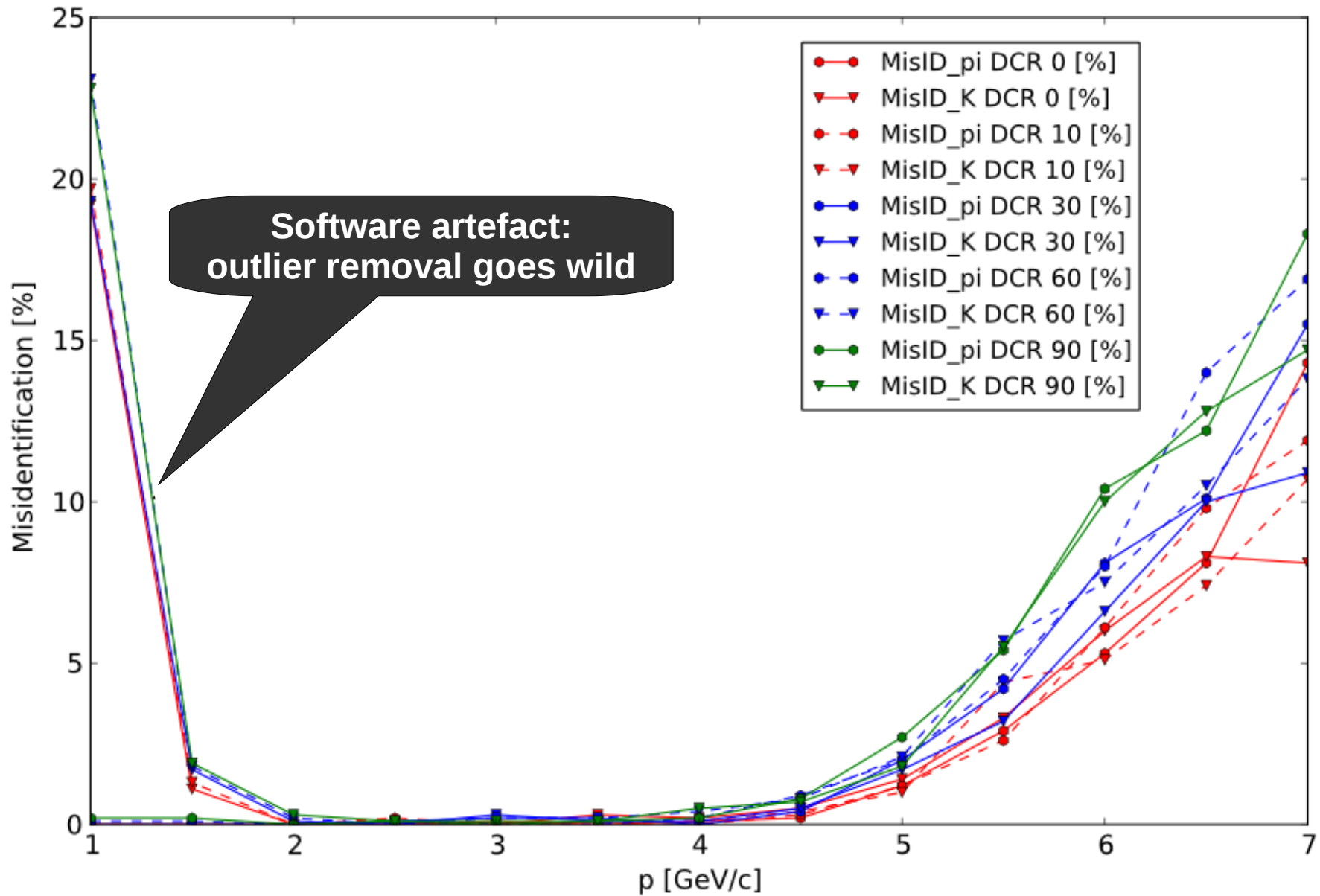
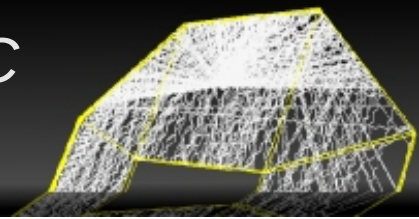
- **Update of reconstruction**

- Improved likelihood(-like) model and parameters



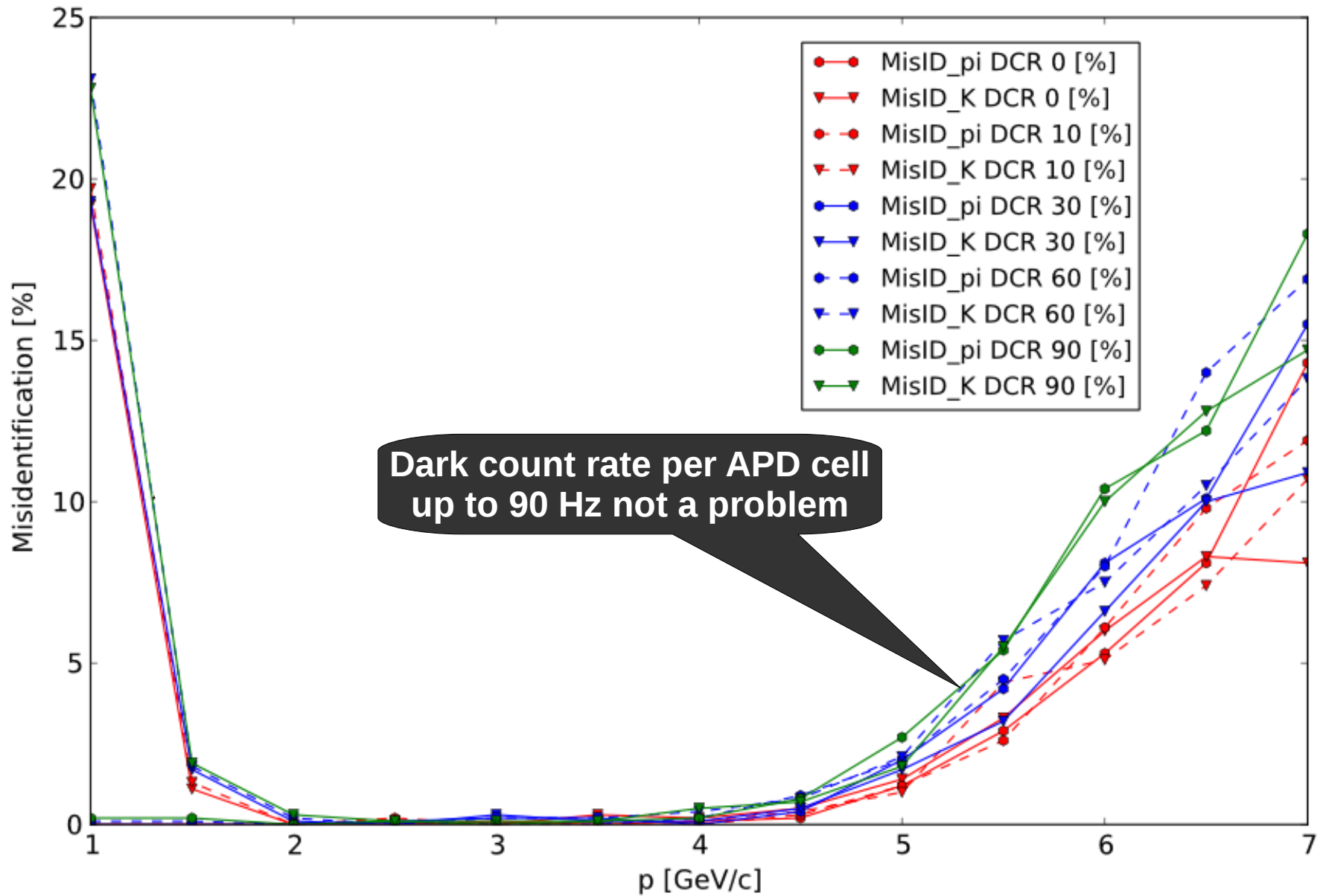
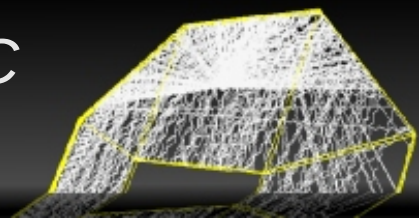
# Improved performance

A 3d Disc DIRC  
for  $\bar{P}ANDA$



# Improved performance

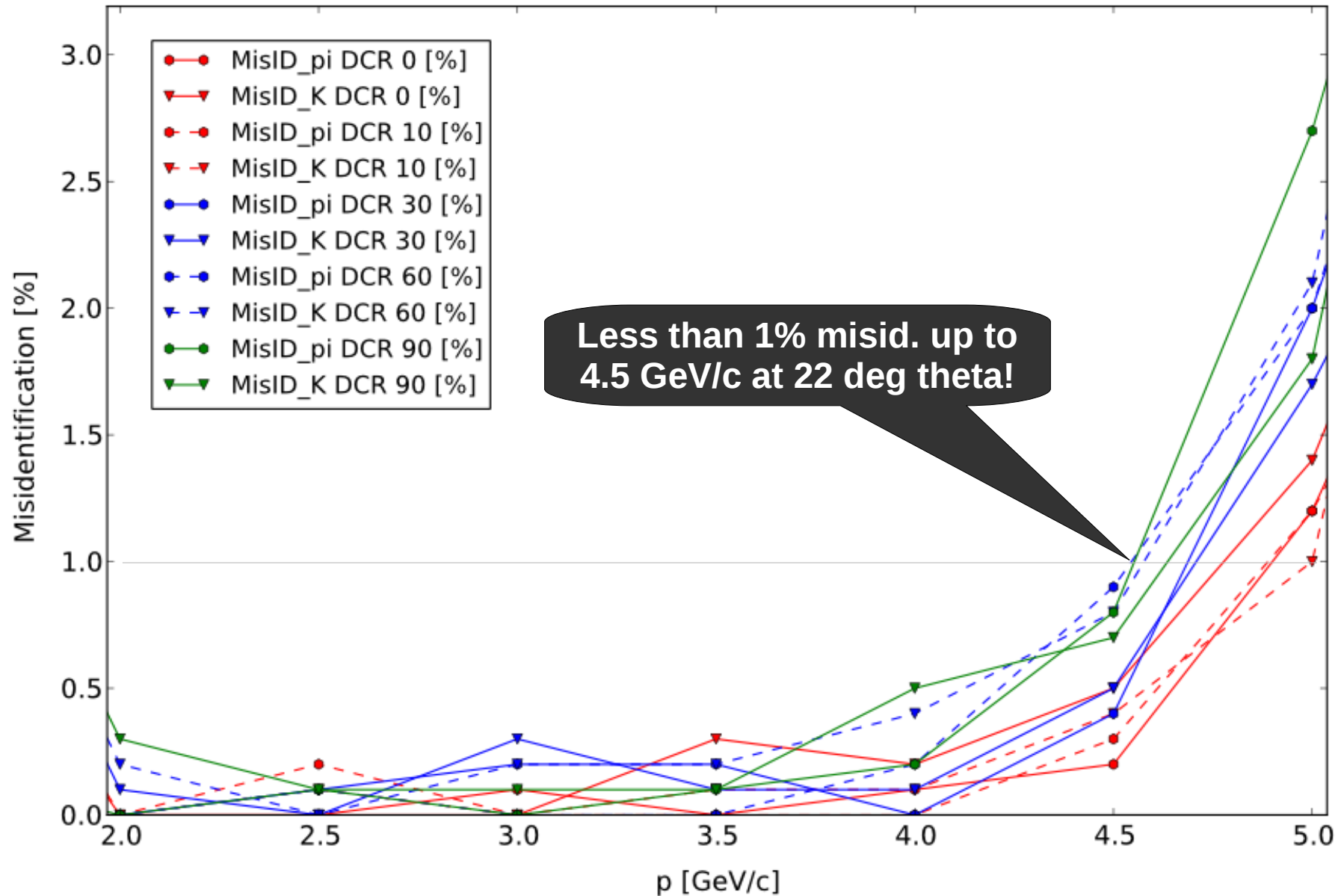
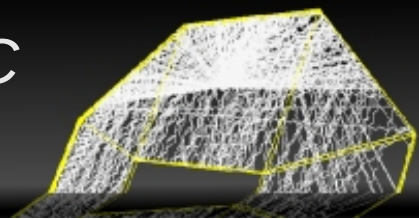
A 3d Disc DIRC  
for  $\bar{P}ANDA$



Dark count rate per APD cell  
up to 90 Hz not a problem

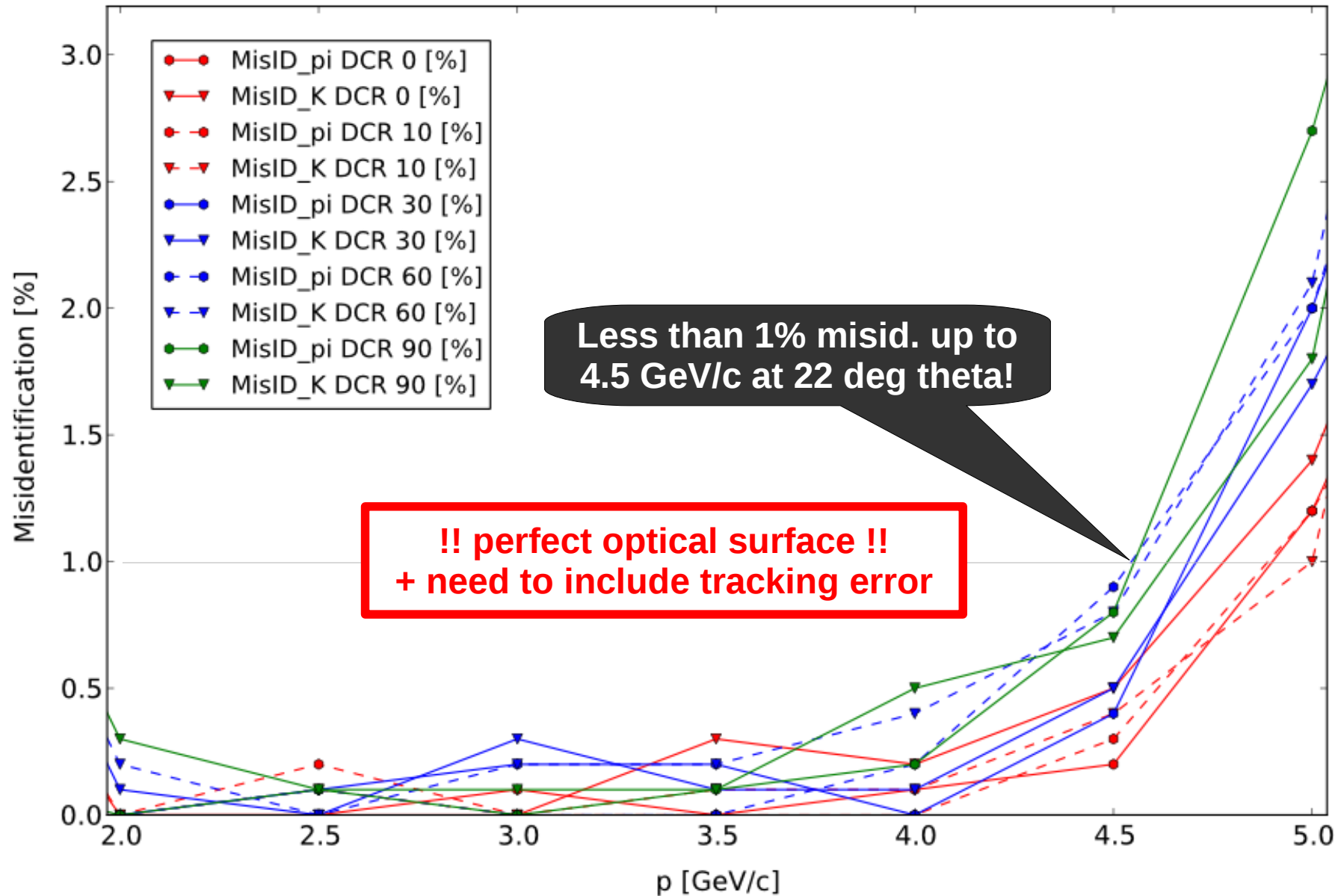
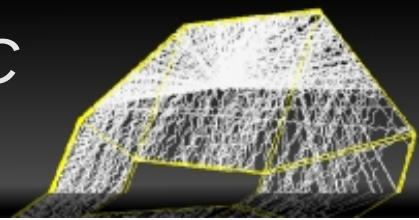
# Improved performance

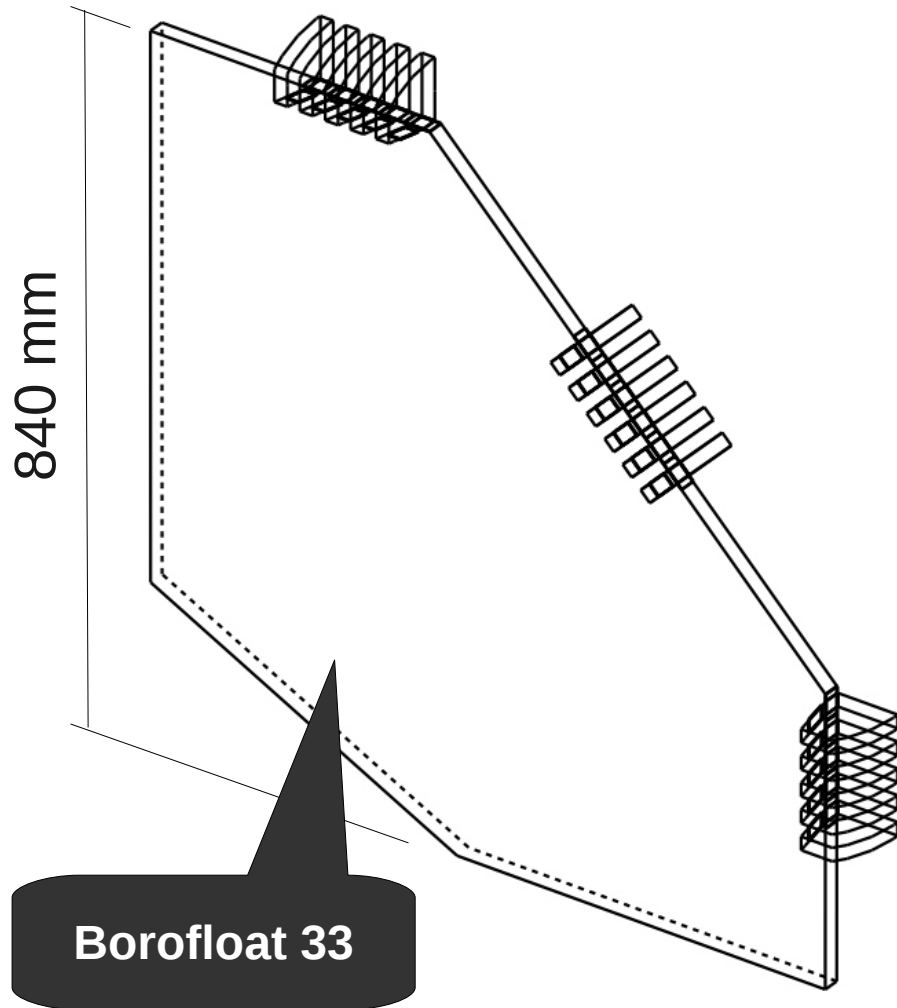
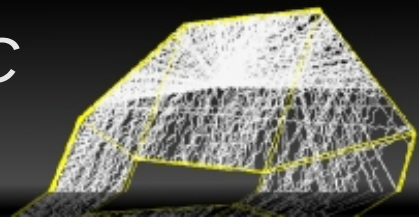
A 3d Disc DIRC  
for  $\bar{P}$ ANDA



# Improved performance

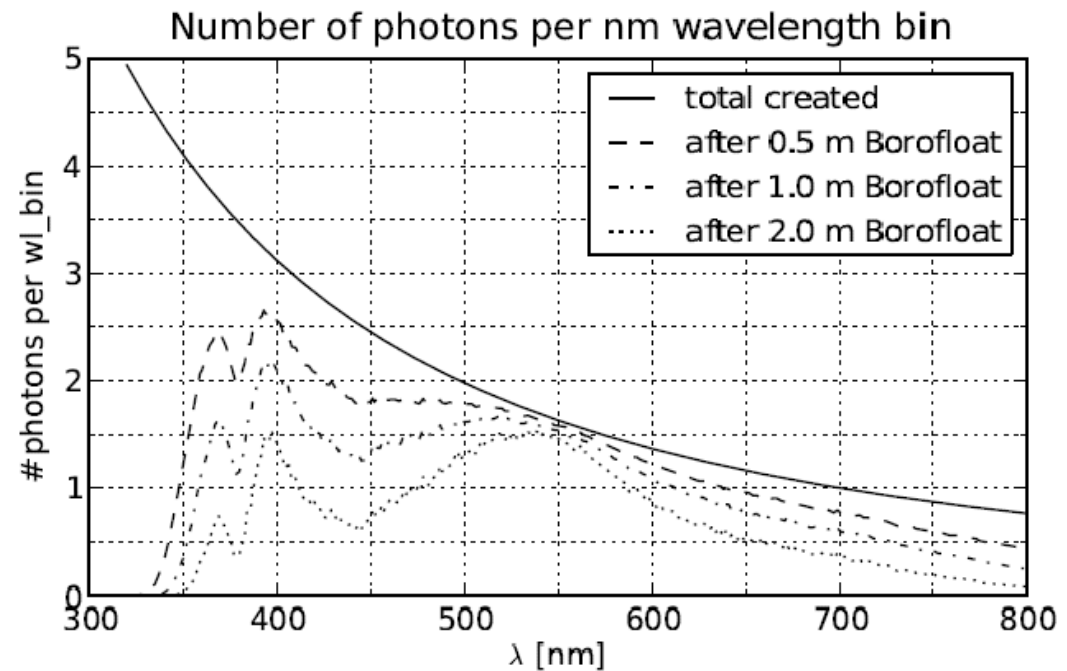
A 3d Disc DIRC  
for  $\bar{P}$ ANDA

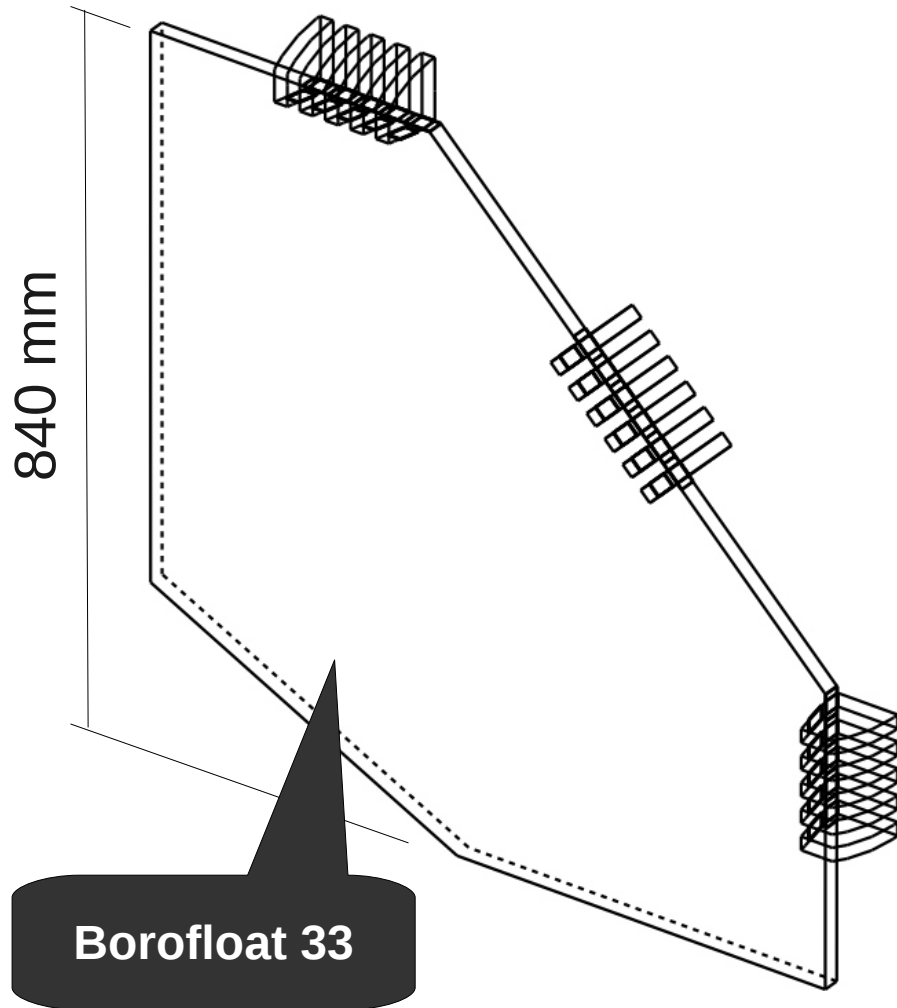
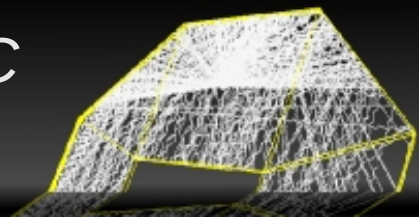




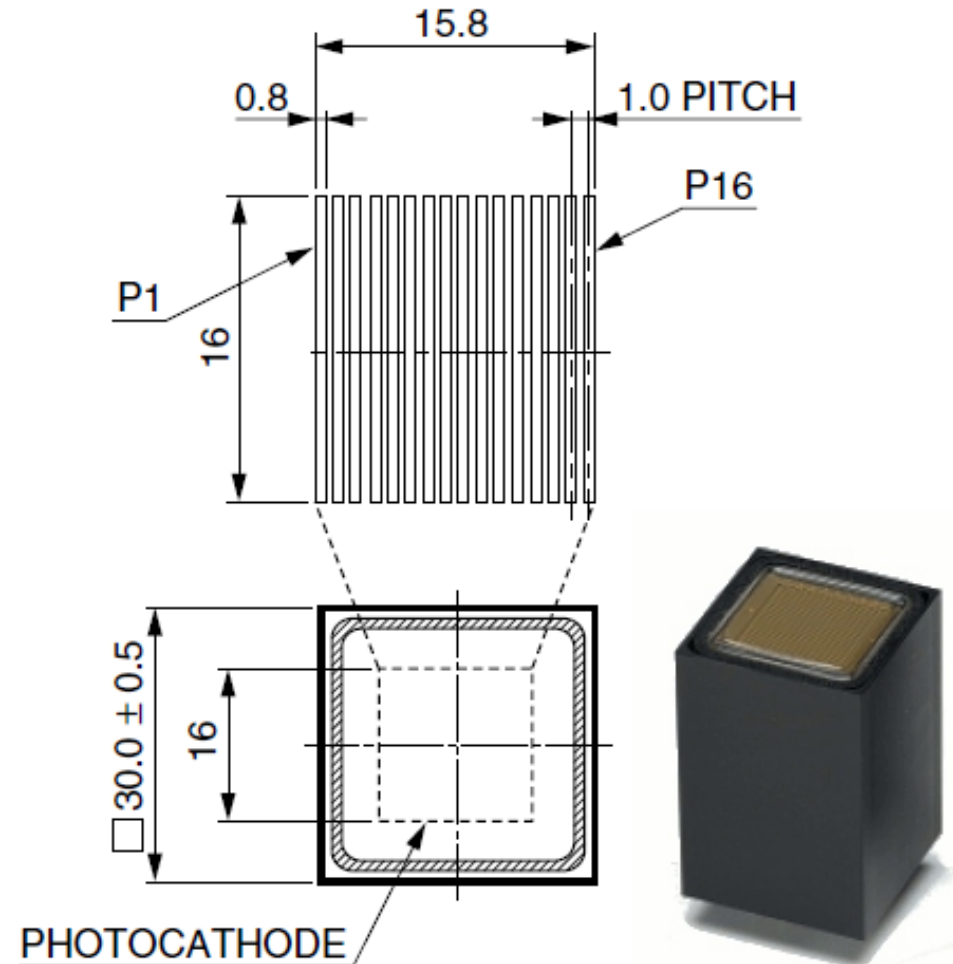
- **Borofloat radiator**

- technical glass, but ...
- very good surface quality
- $R_q < 3$  nm
- UV transmission





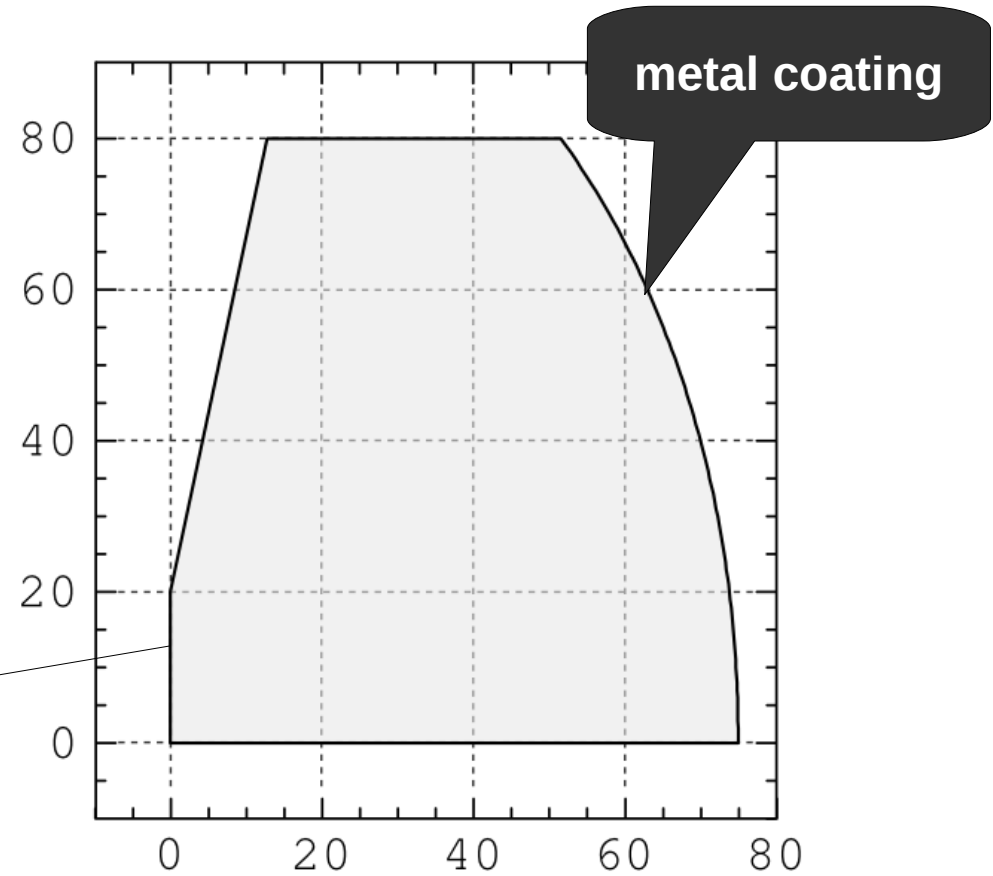
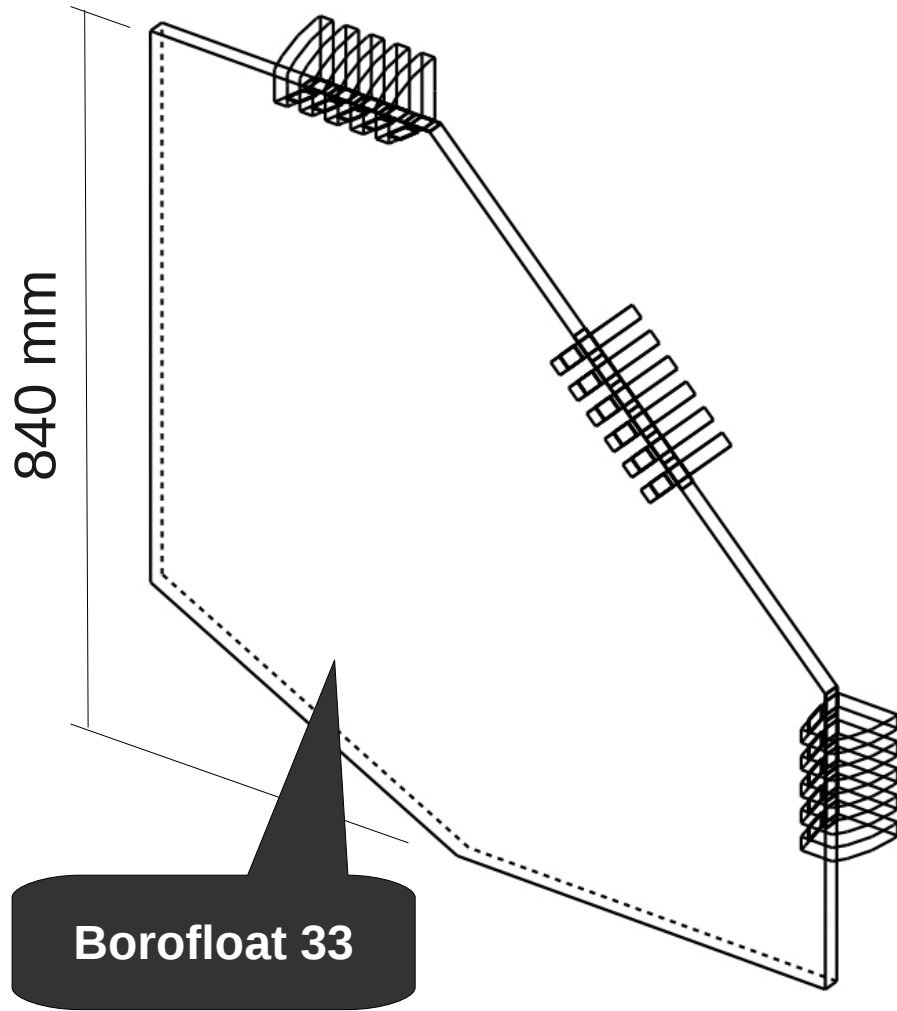
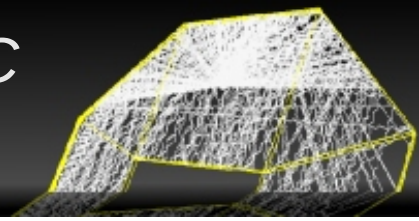
- H10515B-100 (super-bialkali)





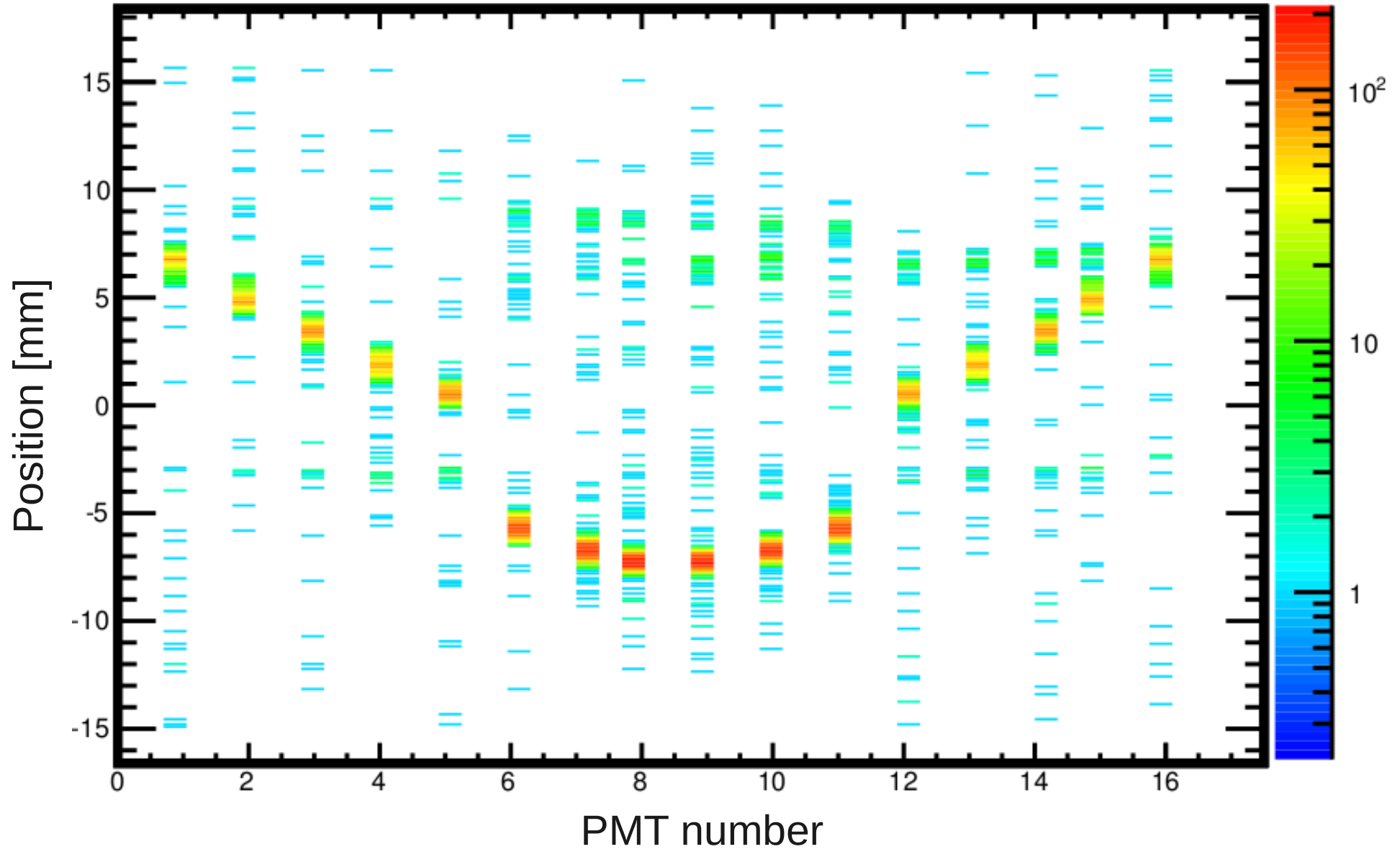
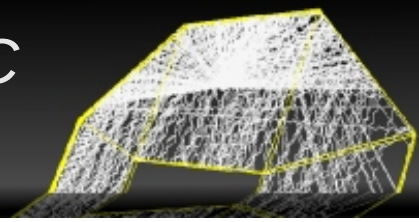
# Prototype

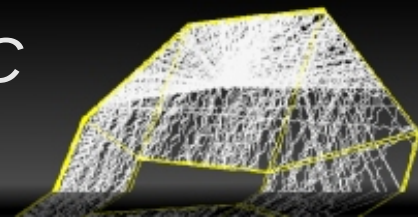
A 3d Disc DIRC  
for  $\bar{P}$ ANDA



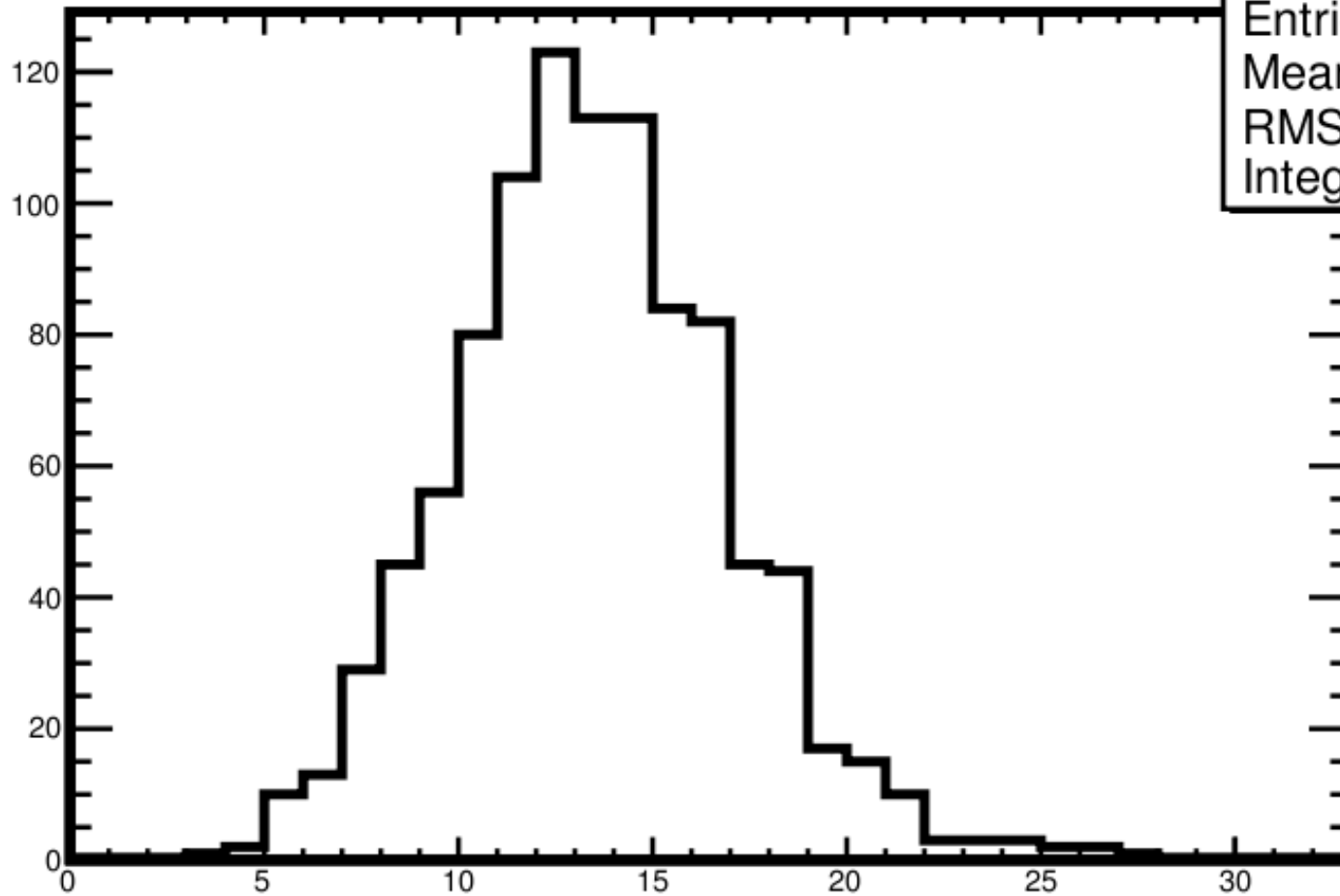
# Prototype pattern

*A 3d Disc DIRC  
for  $\bar{P}ANDA$*





## Number of hits per event

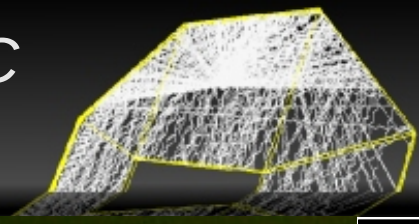


hist2	
Entries	1000
Mean	13.47
RMS	3.547
Integral	1000

Mean: 13 photon hits per electron track

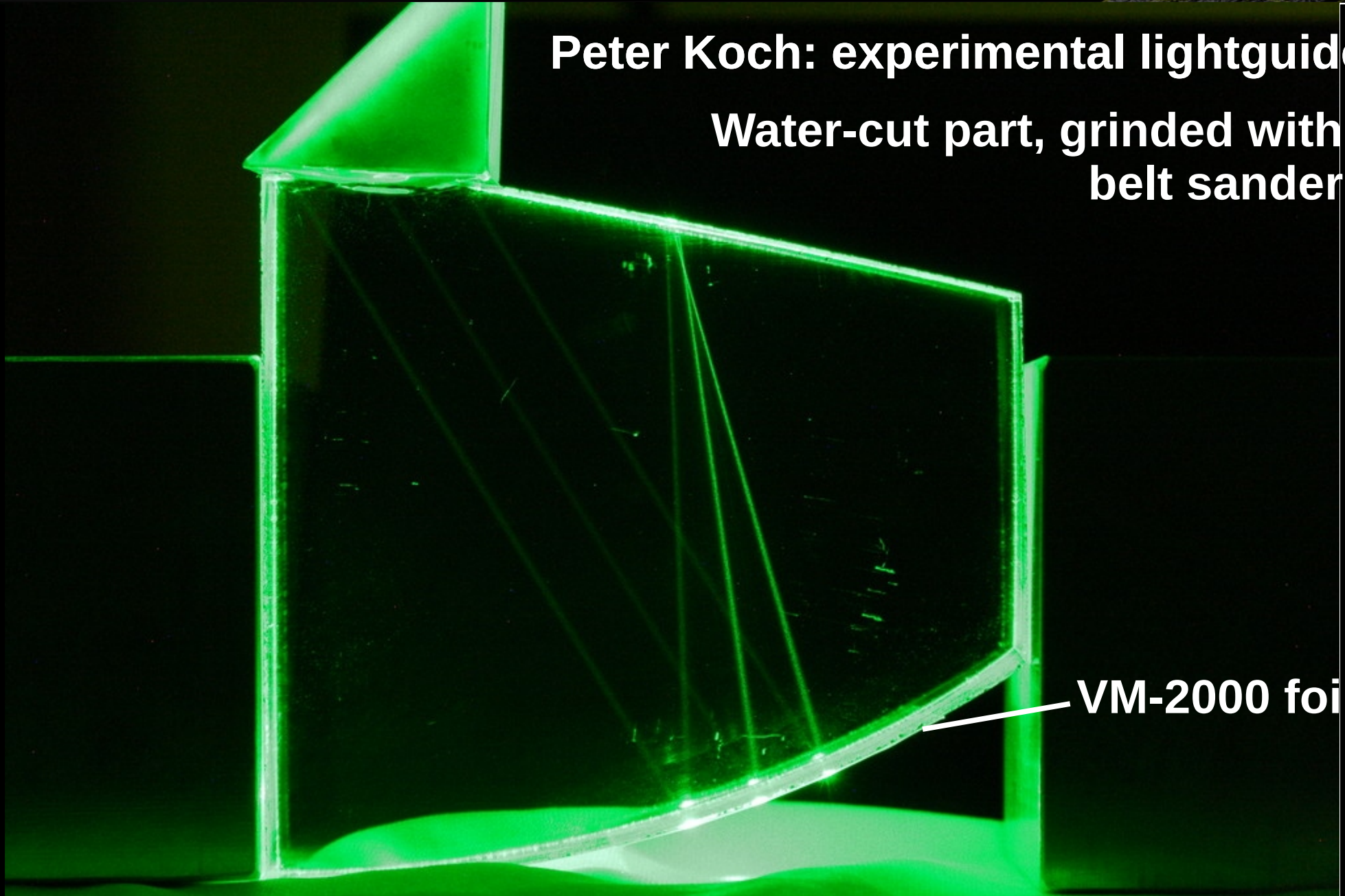
# Prototype

*A 3d Disc DIRC  
for  $\overline{P}$ ANDA*

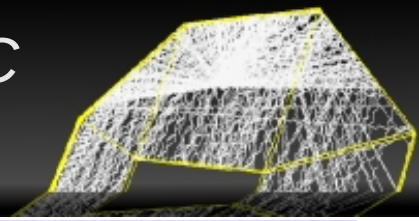


**Peter Koch: experimental lightguide**

**Water-cut part, grinded with  
belt sander**

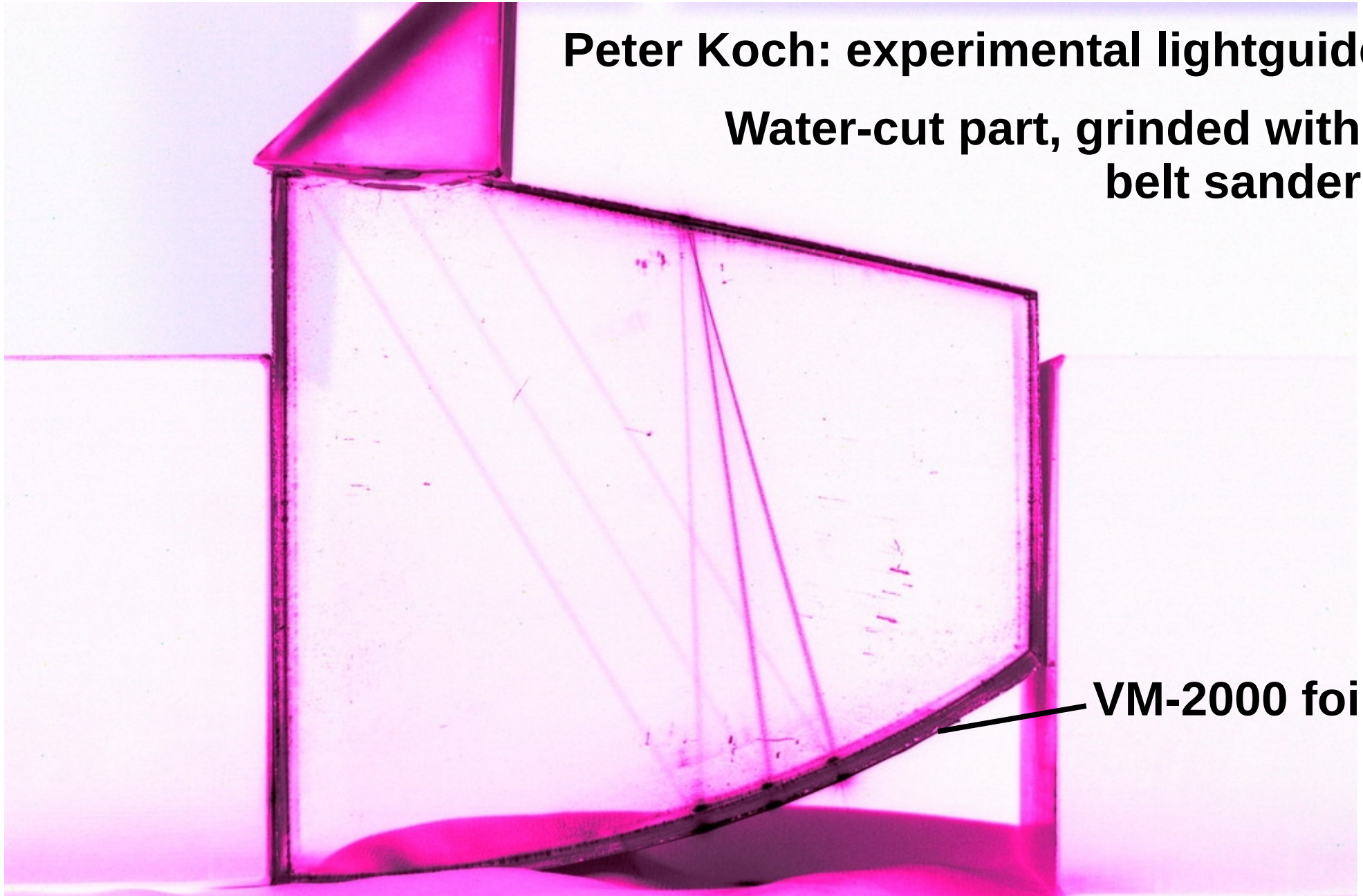


**VM-2000 foil**

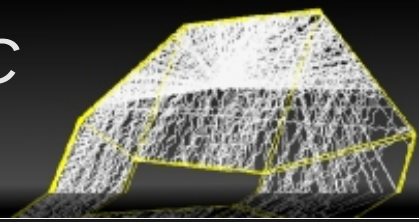


**Peter Koch: experimental lightguide**

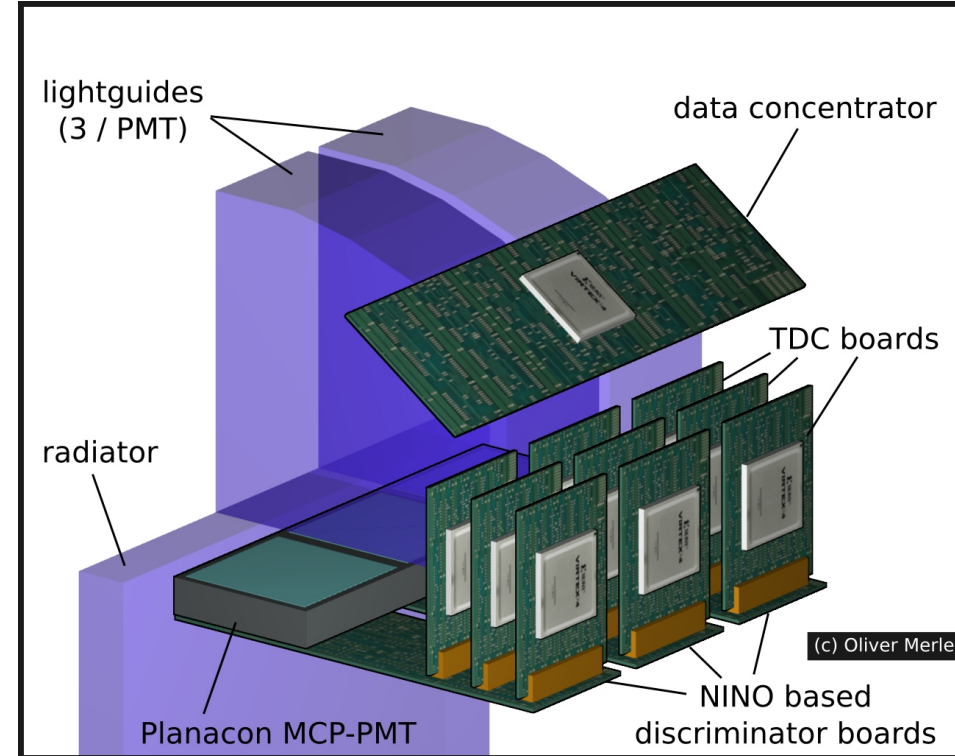
**Water-cut part, grinded with  
belt sander**

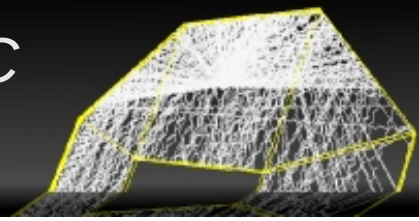


**VM-2000 foil**

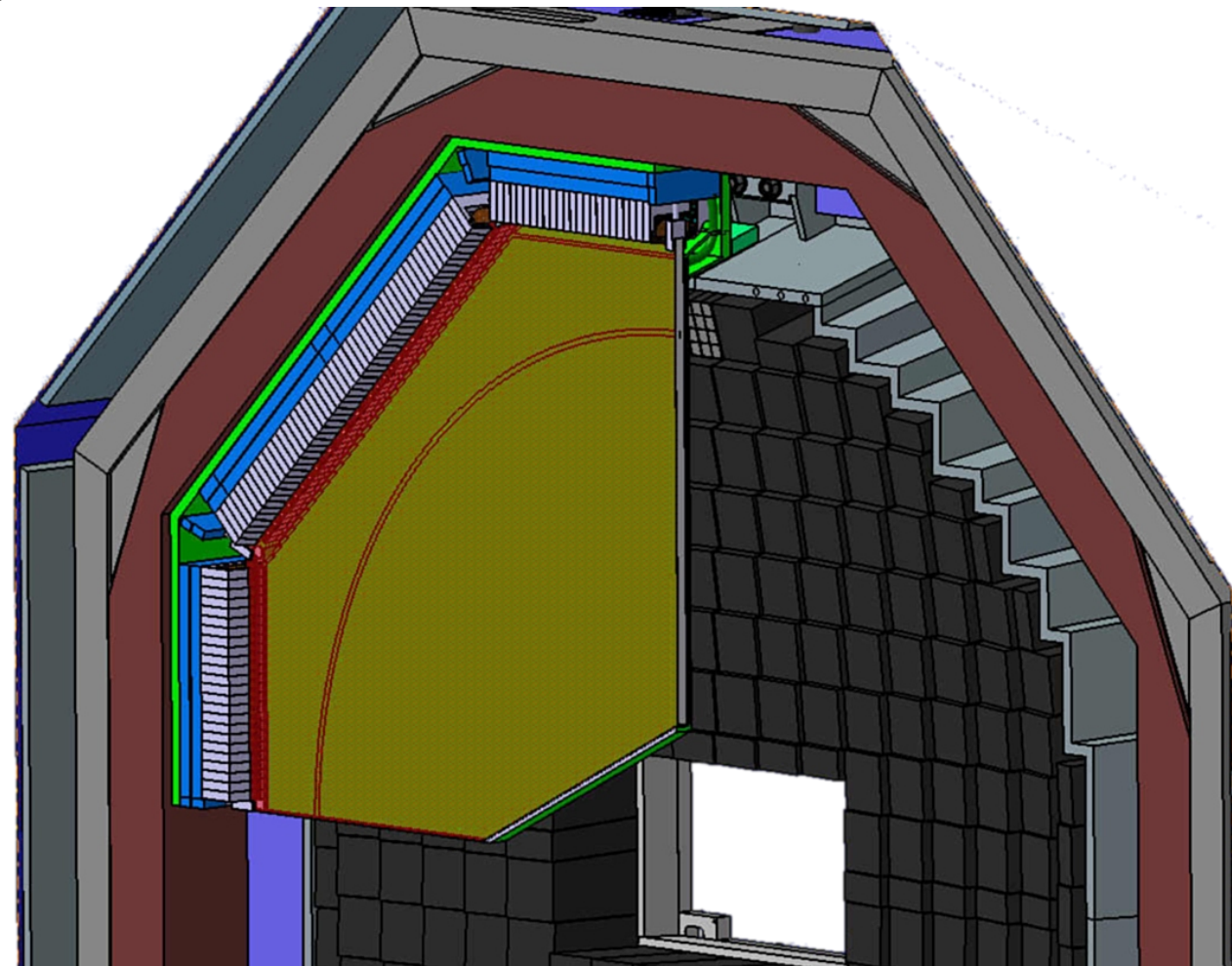


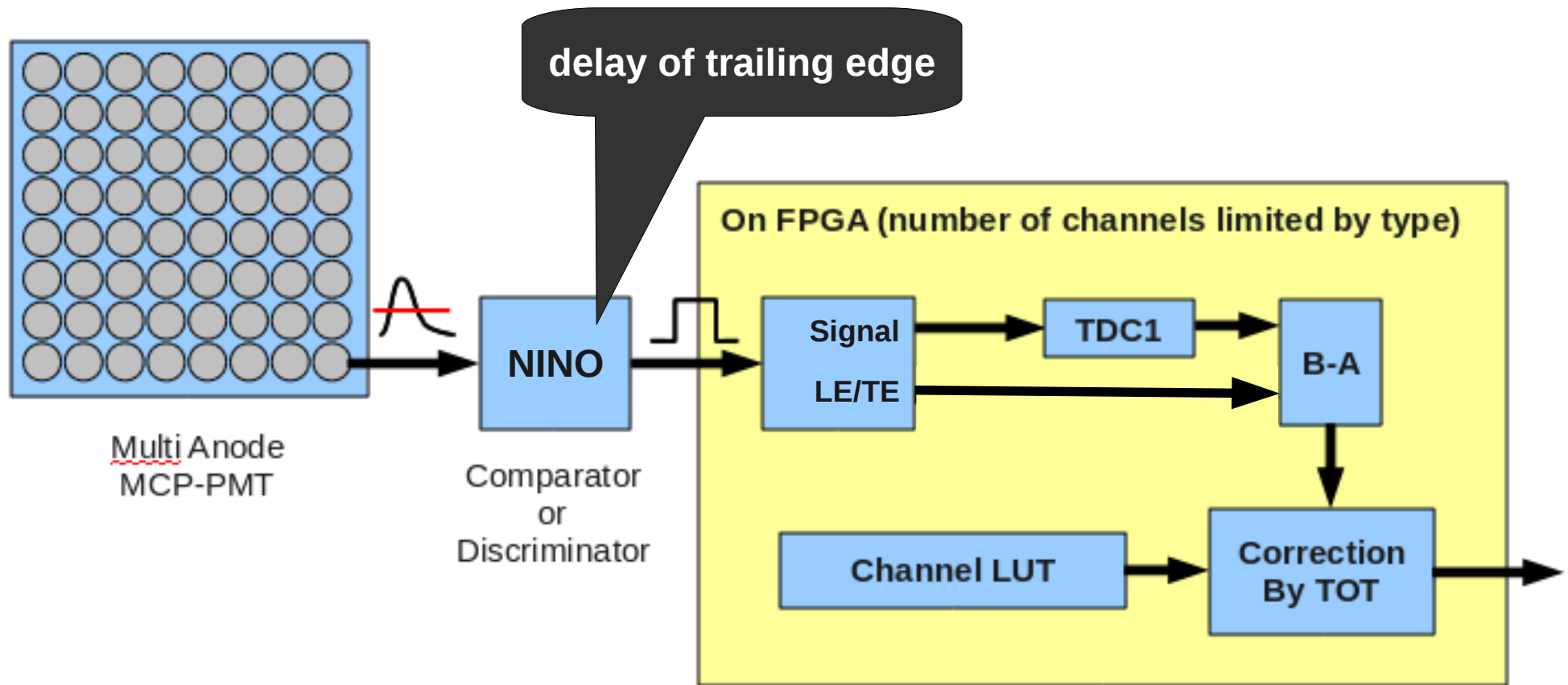
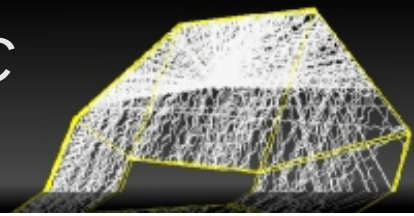
- **Simulation / detector design**
  - PandaROOT implementation
  - Study of an alternative MCP-PMT based design
- **Prototyping**
  - Lightguide production, readout, assembly
  - Testbeam
- **Sensor**
  - Radiation hardness of the Philips dSiPM





# Questions



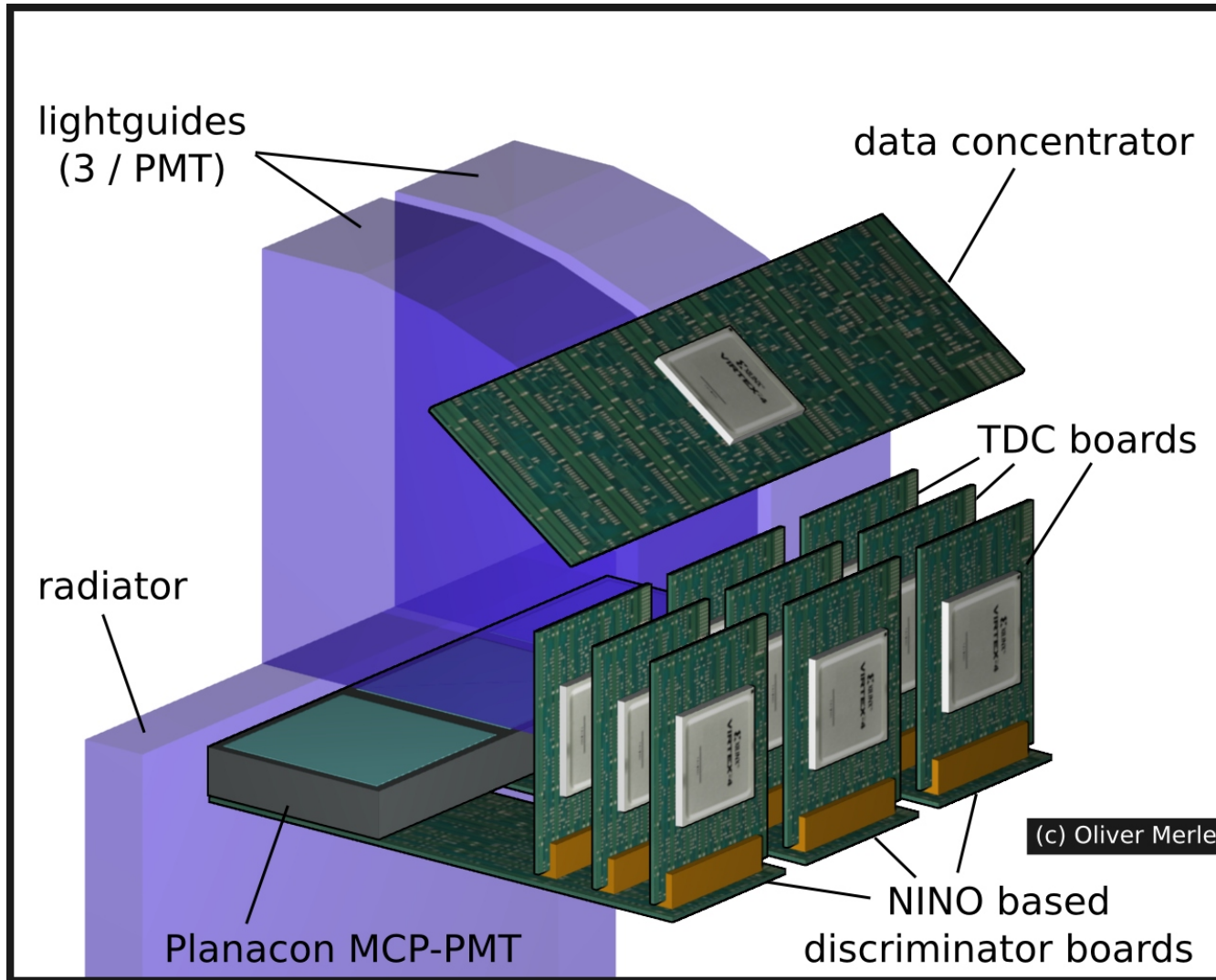
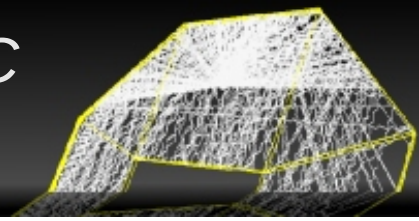


**highly integrated FPGA based readout**



# Detector concept

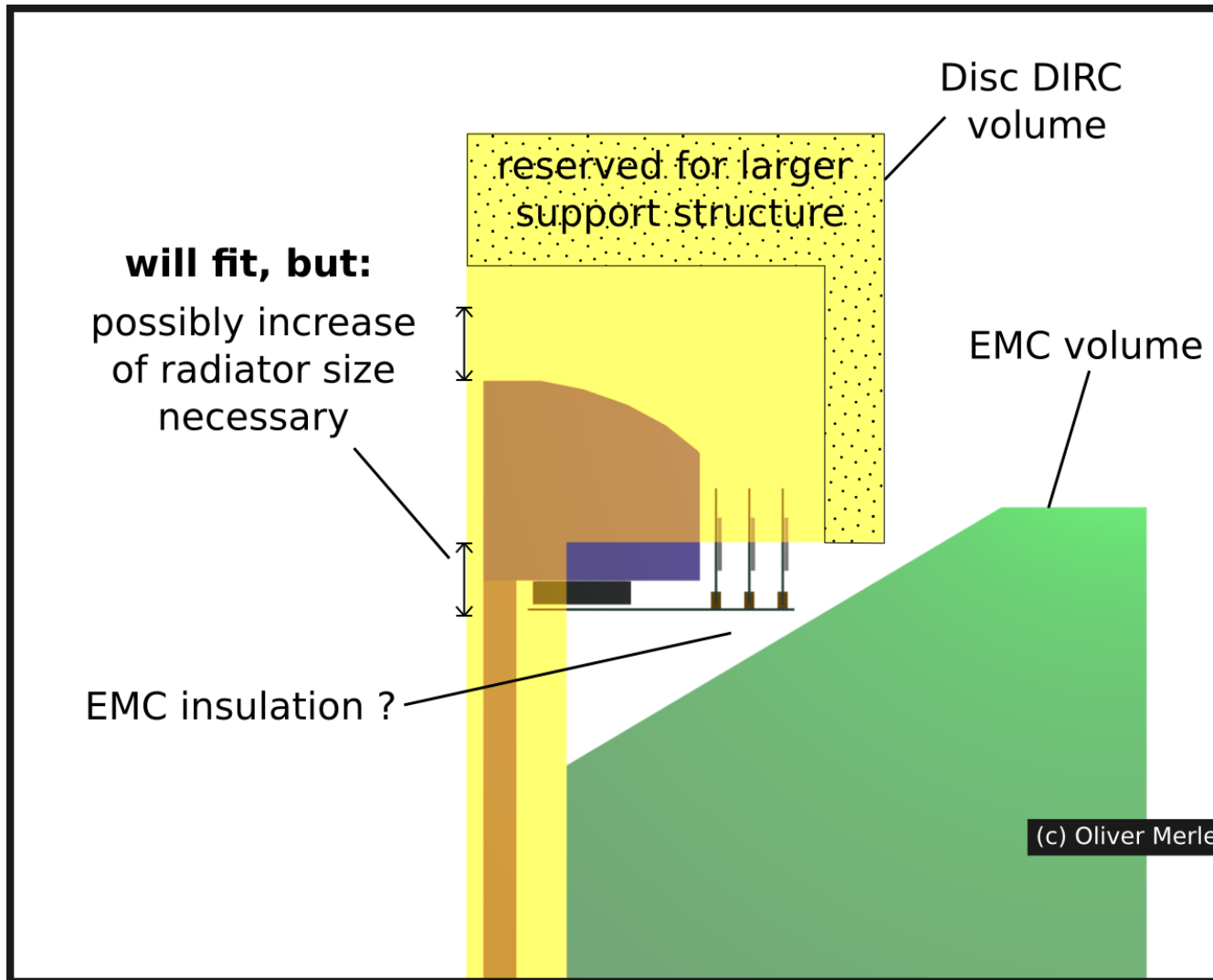
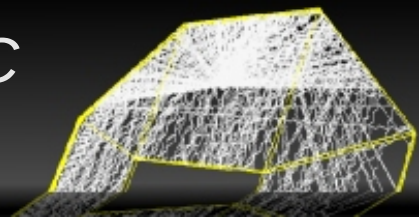
A 3d Disc DIRC  
for  $\bar{P}$ ANDA



## modular design

# Space requirements

A 3d Disc DIRC  
for  $\overline{\text{PANDA}}$



**would fit in PANDA**

# Radiator constraints

A 3d Disc DIRC  
for  $\bar{P}$ ANDA

