

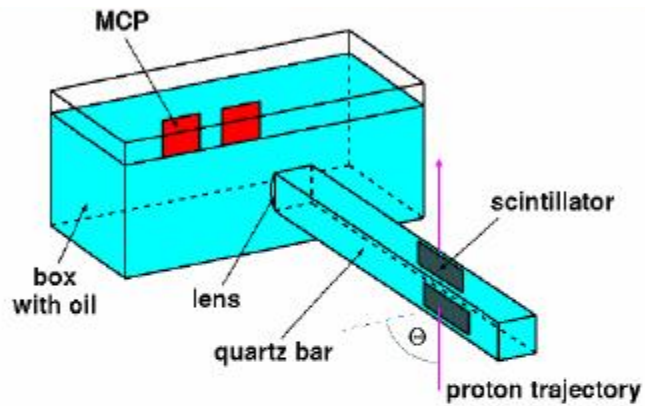
# Planning of the PANDA DIRC Test Experiments

Avetik Hayrapetyan  
on behalf of PANDA Cherenkov Group

Workshop on Fast Cherenkov Detectors, DIRC Design  
May 11-13 2009 Gießen

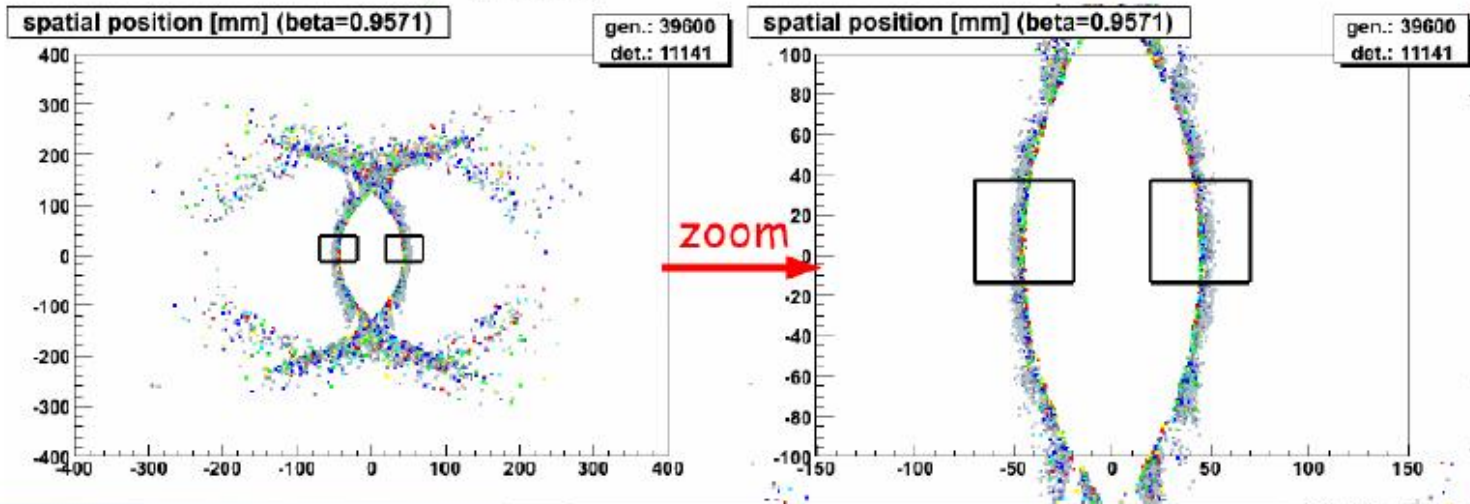
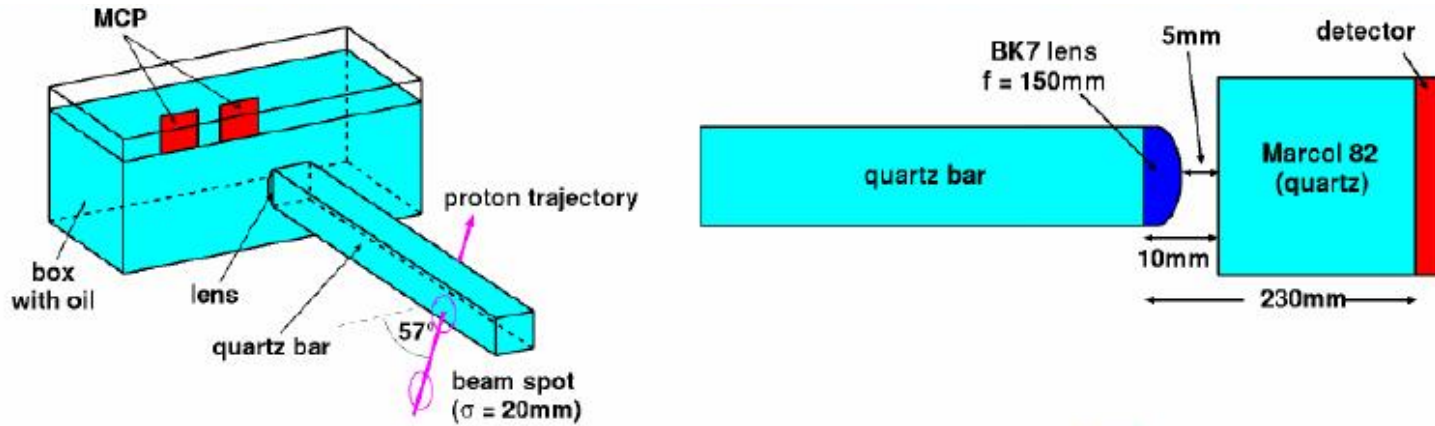
1. Barrel DIRC plans
2. fDISC\_DIRC plans
3. TOP\_DISK DIRC plans
4. Conclusions

# Barrel DIRC Prototype



See C. Schwartz Talk for update

# Barrel DIRC Prototype



Beam Time Sept. 2008

Concettina Sfienti, GSI

# BARREL DIRC Plans



In September a proton test beam GSI as parasitic user

“Either we are two weeks in the same cave with the main user having all the time beam. Then however we cannot enter the cave as we would like and depend on the (too) high beam rate of the main user.

Or we are in another cave and get 10% of the beam in block mode: 2.4 hours per day for 5 days. CBM plans the same.

If we merge we could have 8 days.”



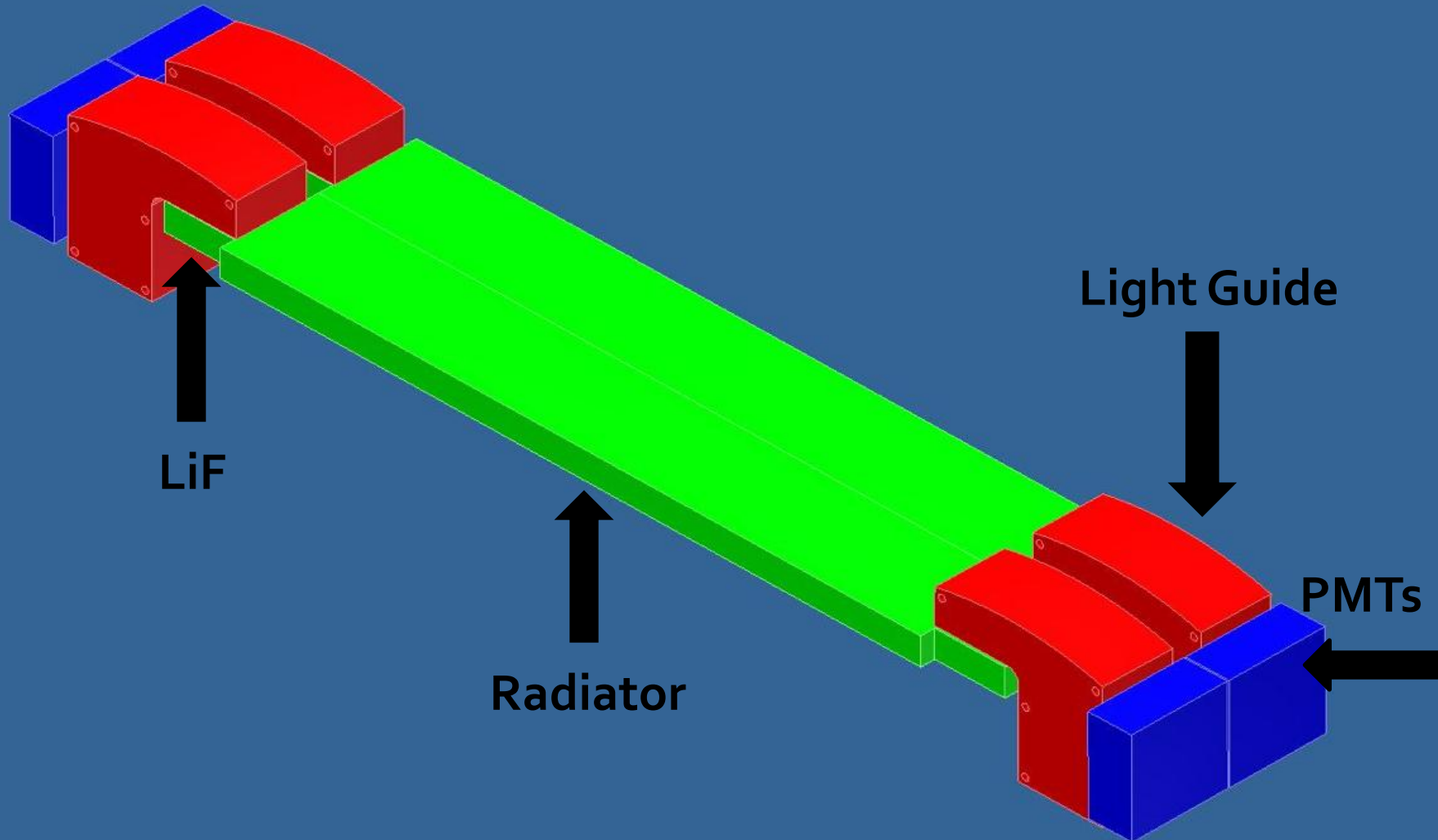
Other PANDA-Cherenkies participate.

For the moment the situation is however not fixed.

It might be beginning of September and I try to get this Cave with 2.4h per day.

Carsten

# Glasgow Prototype Design



# Prototype

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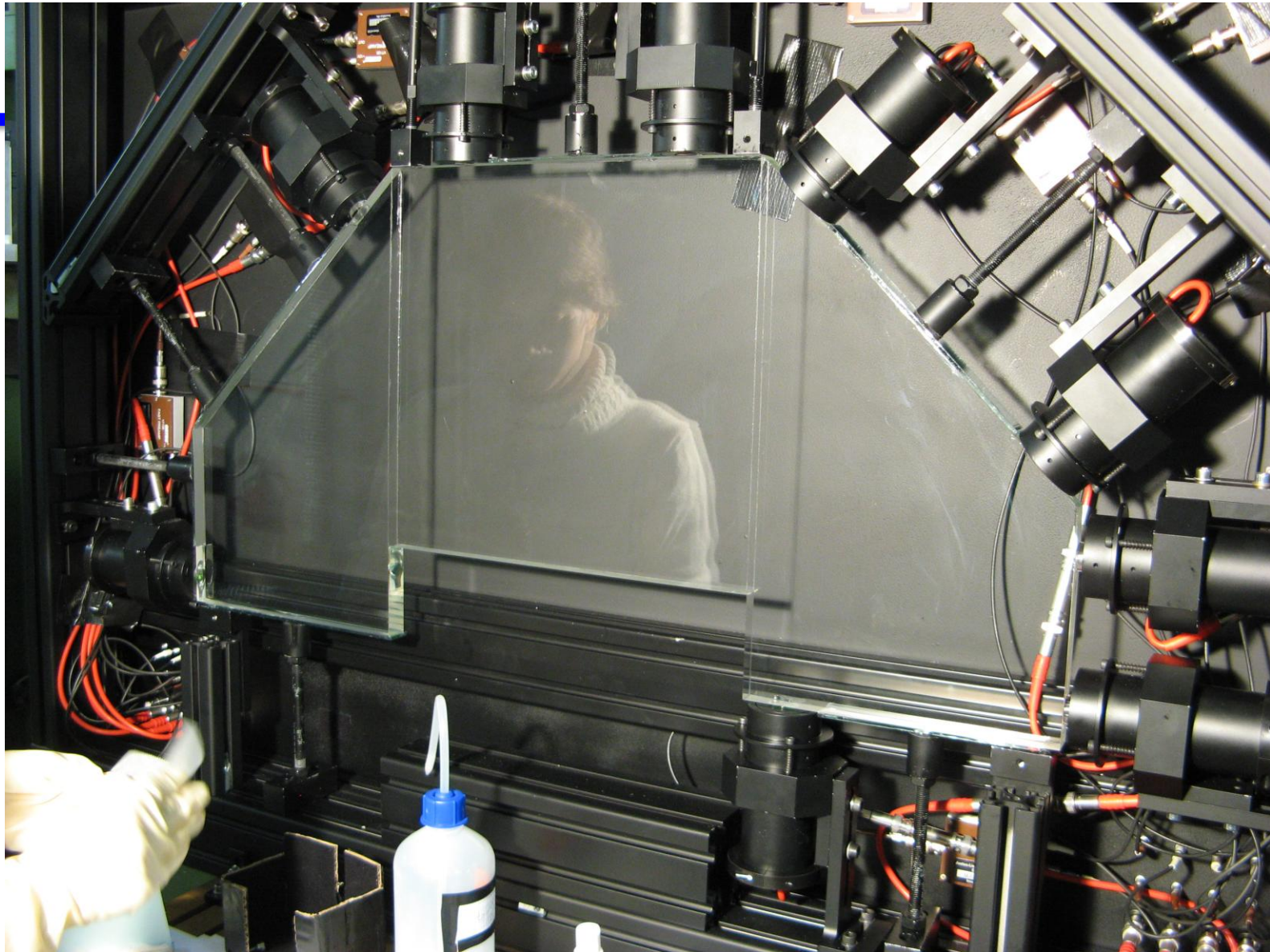
- Two Fused Silica Bars
  - 500mm x 70mm x 20mm
  - Contact on lengthwise side
- 4 plates of Lithium Fluoride – 2 at each end
  - 50mm x 50mm x 15mm
  - Contacting with 70mm side of Silica
- Photomultipliers in contact with focal plane
- Use Commercial Electronics

# Test Beam

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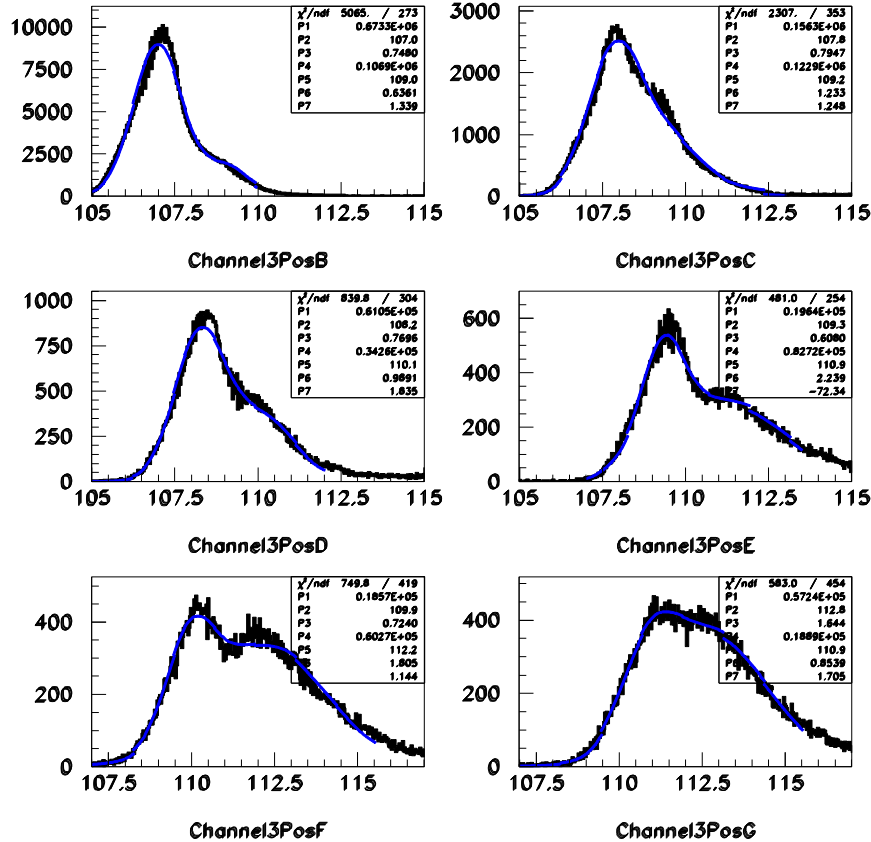
- Study multiple Polar and Azimuthal angles for Pions, Kaons & Protons.
- Test will allow us to study:
  - Photon transport properties
  - Dispersion correction
  - Pattern recognition & reconstruction
  - Mechanical design issues
  - Unforeseen challenges

# Unsere Pläne, Our Prototype





# Our first Results with this Prototype

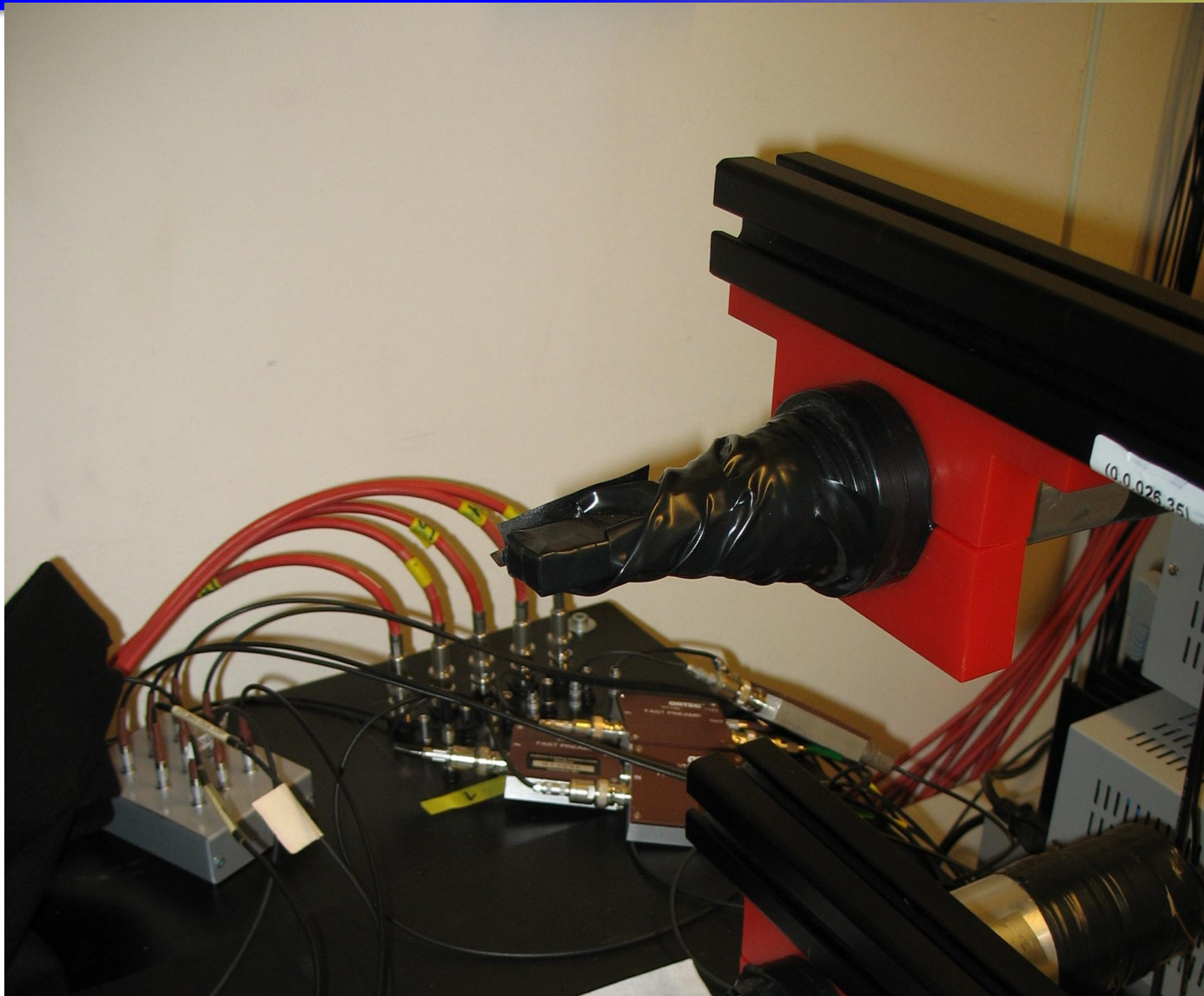


With this spectra we got 190ps Resolution

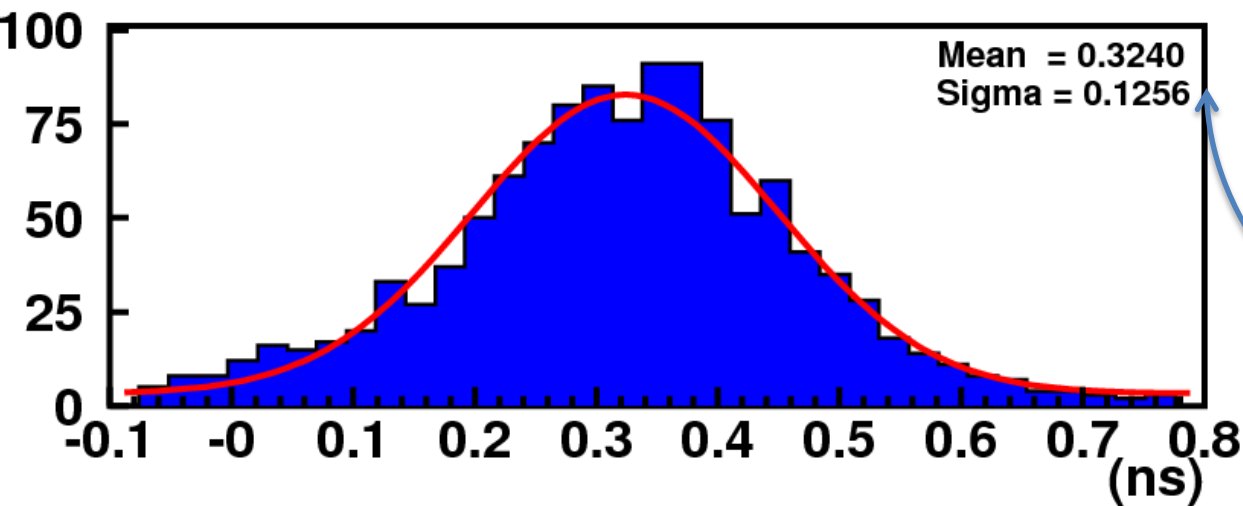
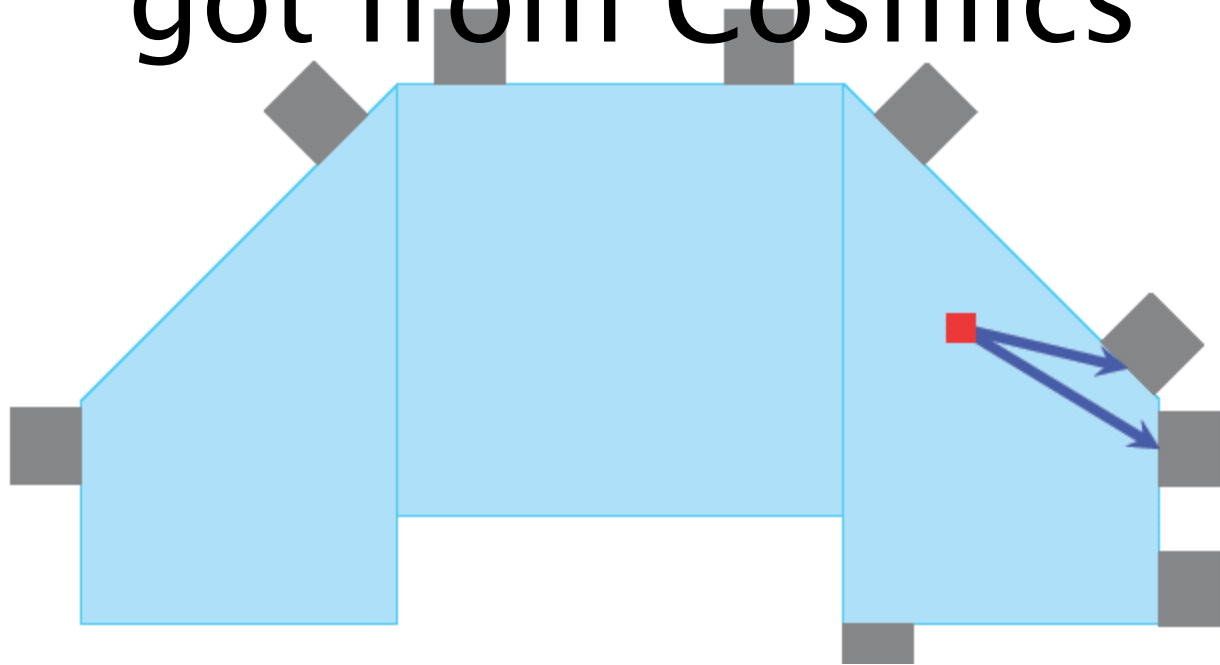
# Current status of our Prototype



# With two UP/DOWN Trigger counters



# The Best Result we got from Cosmics



This Measurement  
yields ~90ps  
Resolution  
We are in Right  
Direction

# Unsere Pläne!

- Test the Hamamatsu MPPC Photon detectors(in Lab, with Laser and Cosmics)
- Measure the time resolution we get in parallel with BINP MCPs  
(in Lab with Laser/Cosmics)
- In parallel with radial readout try side readout too(in Lab with Cosmics)
- Check two wavelength measurements via dichroic mirrors  
(we need second type Photon detectors peaking ~500-700nm range)
- Test a possibility that we can cool Glas and detectors together, i.e. Prototype  
and simultaneously do a measurement using Cosmics
- building a prototype(on basis of ours) with so many channels plus FEE prototype and  
DAQ that we could see the Parabola in xt space will be good proof of principle
- as soon as our Prototype+FEE+DAQ will be equiped with enough Channels go for  
Test Experiment, we promised do the first one in 02/2010 it can be any beam(e, $\pi$ ,P)  
But with enough Beamtime to have accumulate good Statistic
- Second Test Experiment we promise to do in 08/2010, hopefully, with design  
as close as possible to the final design of DIRC we want to put in TDR

■ Dichroic mirror blue      - - - green photon  
□ Dichroic mirror green      — blue photon

