

SciTil/BarrelTOF Status Update

Ken Suzuki, Stefan-Meyer-Institut, ÖAW
17.Mar.2015 PANDA LII. Collaboration Meeting in Gießen

Work packages

- Organization
- Mechanics
- Software / Simulation
- Radiation Hardness Test
- Readout Electronics
- Misc

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Video meeting with new institutes

- on 20.01.2015
- 8 people from India (BARC 4, Assam 2, Bolpur 2) and Herbert, Dominik, Lukas, Ken
- Meeting minutes available on the Forum

BARC
Mumbai

Bidyut Roy
Prof.

Harpool Kumawat
Staff scientist

Arpit Parmar
PD

Sonika
PD



**Gauhati Univ.
Assam**

Kushal Kalita
Prof.

Kamal Dutta
PhD

**Visva Bharati
Univ.
Bolpur, near
Kolkata**

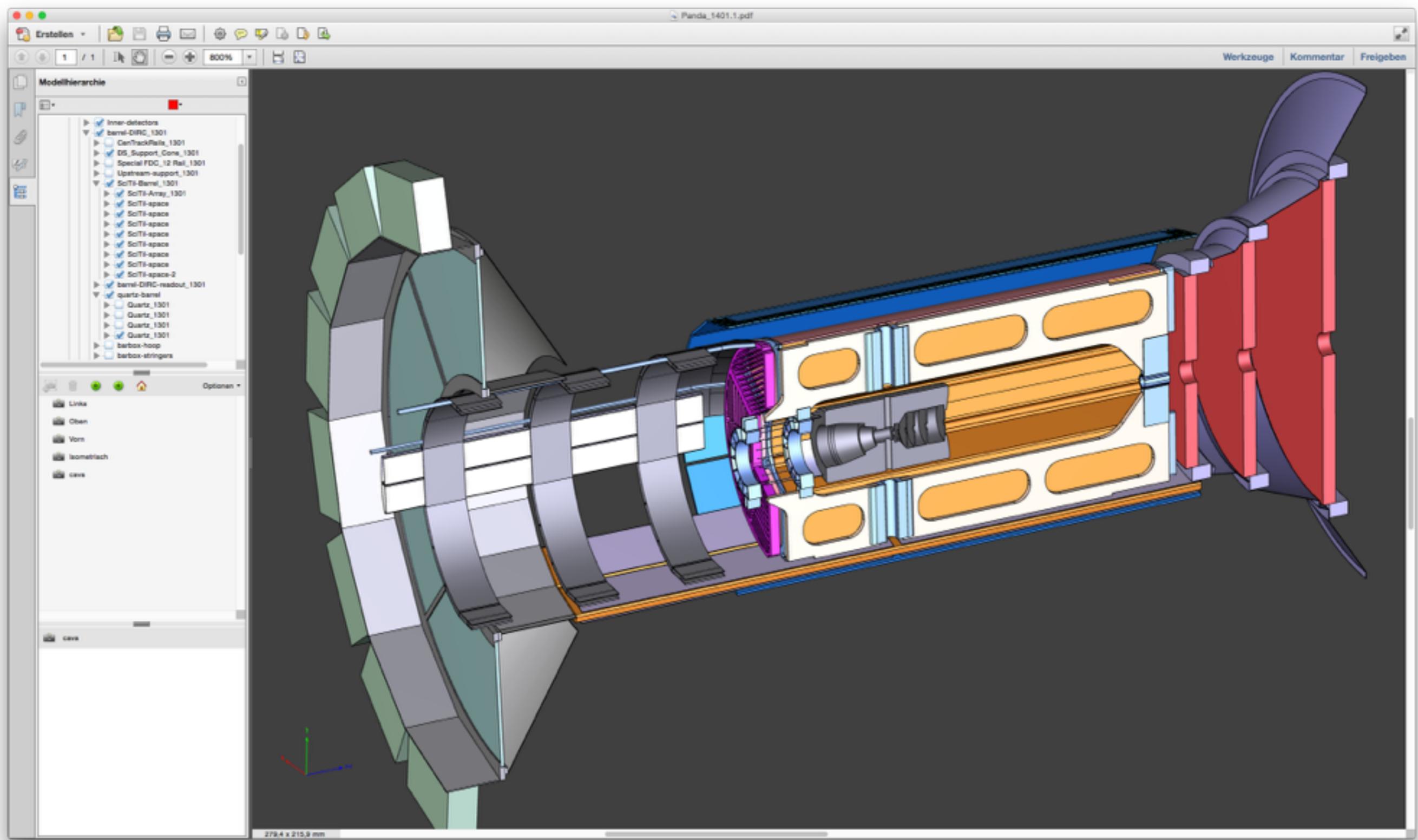
Uptal Roy
Prof

Sougata Basu
PhD

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First drawing in the EDMS



Work packages (proposal)

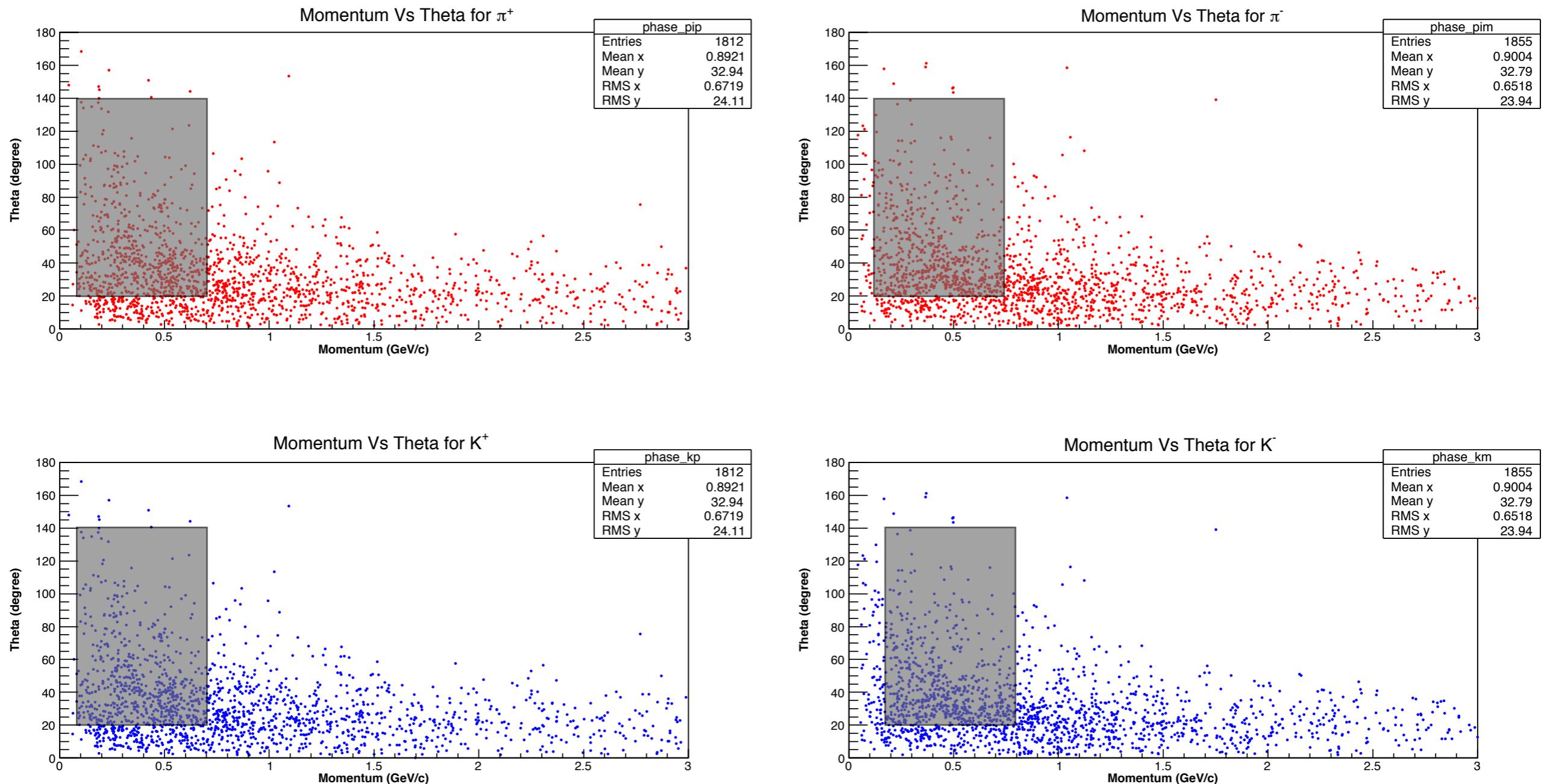
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Work Package Software / Simulation

- Software contact person of SciTil: Dominik Steinschaden
- Kamal Dutta (Assam)
 - Physics simulation?
- Sougata Basu (Bolpur)
 - Pattern recognition?

Kamal Dutta:

$$\bar{p} + p \rightarrow \psi(3770) \rightarrow D^+ D^- \rightarrow (K^- \pi^+ \pi^+) (K^+ \pi^- \pi^-)$$



K/π with $p < 700$ MeV/c in the central region ($22^\circ < \theta < 140^\circ$)

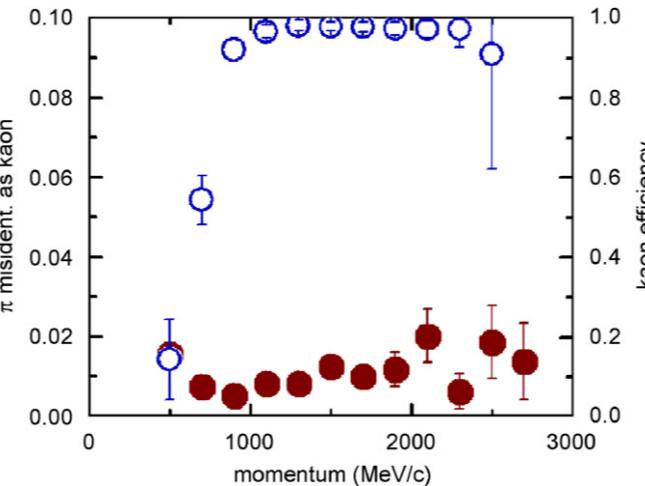


Fig. 4. The probability to misidentify a pion as a kaon as a function of the particle momentum (closed circles) and the efficiency to identify a kaon (open circles).

Schwarz, C., Bettoni, D., Branford, D., Carassiti, V., Cecchi, A., Dodokhof, V. K., et al. (2008). The barrel DIRC of the PANDA experiment. *Nuclear Instruments and Methods in Physics Research Section a: Accelerators, Spectrometers, Detectors and Associated Equipment*, 595, 112. doi:10.1016/j.nima.2008.07.053

Particle type	In the barrel region	$P < 700$ MeV/c	Ratio
π^+	1538	654	0.4252
π^-	1486	579	0.3896
K^+	1538	654	0.4252
K^-	1486	579	0.3896

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Work Package

Radiation Hardness Test

- Literature study
- Pronto Irradiation Facility (PIF) at PSI
 - Lukas' talk
- Should we go for our own irradiation test?

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Status

- Status in Vienna → Lukas
- Mainz?

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Service cross section

- First estimation given to Lars
- Based on the TOF-PET chip evaluation kit
 - 1 board = 256 channels, 3 cables (power 40W, USB, ether)
 - total 10k channel → 40 boards

System Name	Total Service Cross Section	Rear Solenoid Ducts	Front Solenoid Ducts	Backwards Central Opening	Other	Thereof routed to Service Area E10
HV	not to outer world					
LV	530 mm ²					
Readout	530 mm ² + 500 mm ²					
Gases	not foreseen					
Readout Cooling	under consideration					
Detector Cooling	not foreseen					
Other (specify)						
Heat anticipation						
TOF-PET chip	10 mW * 10k channel = 100 W					
SiPM sensor	1 µA x 70 V x 10k channel = 0.7 W					
Readout board	60W / 256 channel, 2.4kW total					

Outlook

- Radiation hardness, thing to discuss (Lukas)
- Software
 - should accelerate
 - Bolpur group
- Readout electronics
- Beamtime?