



TAG-PID

PANDA

Technical Assessment Group PID

Report: Separation Power and

Detector Performance

G.Schepers

Georg Schepers
GSI



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PANDA Technical Assessment Group PID actual

C. Schwarz, G. Schepers

Chair

B. Kopf / R. Nowotny

Barrel Calorimeter

R. Kaiser/G. Rosner/I. Lehmann/B. Seitz

Forward Cherenkov

O. Denisov / M. P. Bussa / M. Maggiora

Muon counter

K. Föhl / P. Vlasov

Cherenkov Counter

J. Smyrski / P. Hawranek / O. Wronska

Forward Calorimeter

Q. Weitzel / B. Ketzer / S. Neubert

TPC

(Carsten Schwarz/Aida Galoyan)

ToF

K. Peters

Detectors

Georg Schepers
GSI



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TAG PID: Global PID Requirements

•Subject

- Requirements from physics
- Evaluate potential of each subsystem
- Matching of systems

•Deliverables

- Definition of global PID scheme
- Optimized set of detectors and parameters

•Time Frame

- One year from asap

PANDA Meeting @ DD 9.March 2006

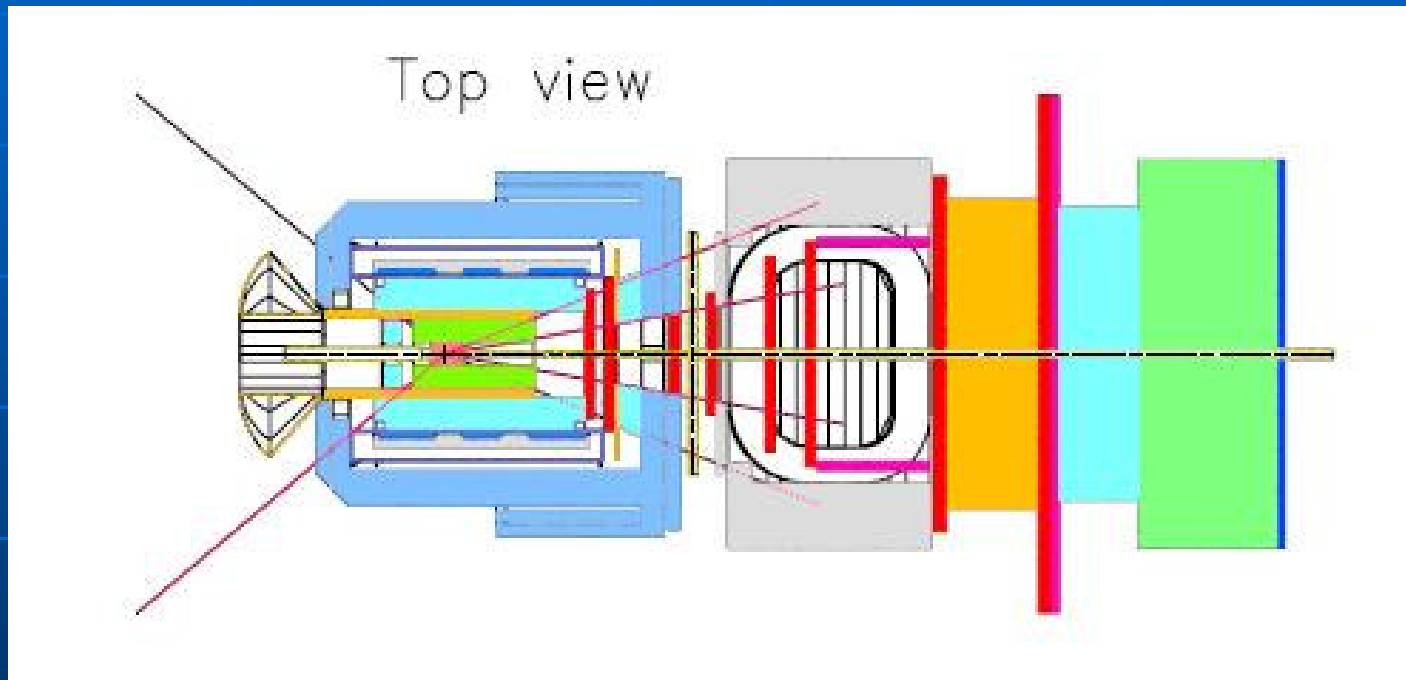
PANDA Meeting @ GSI 13. December 2006

Georg Schepers
GSI



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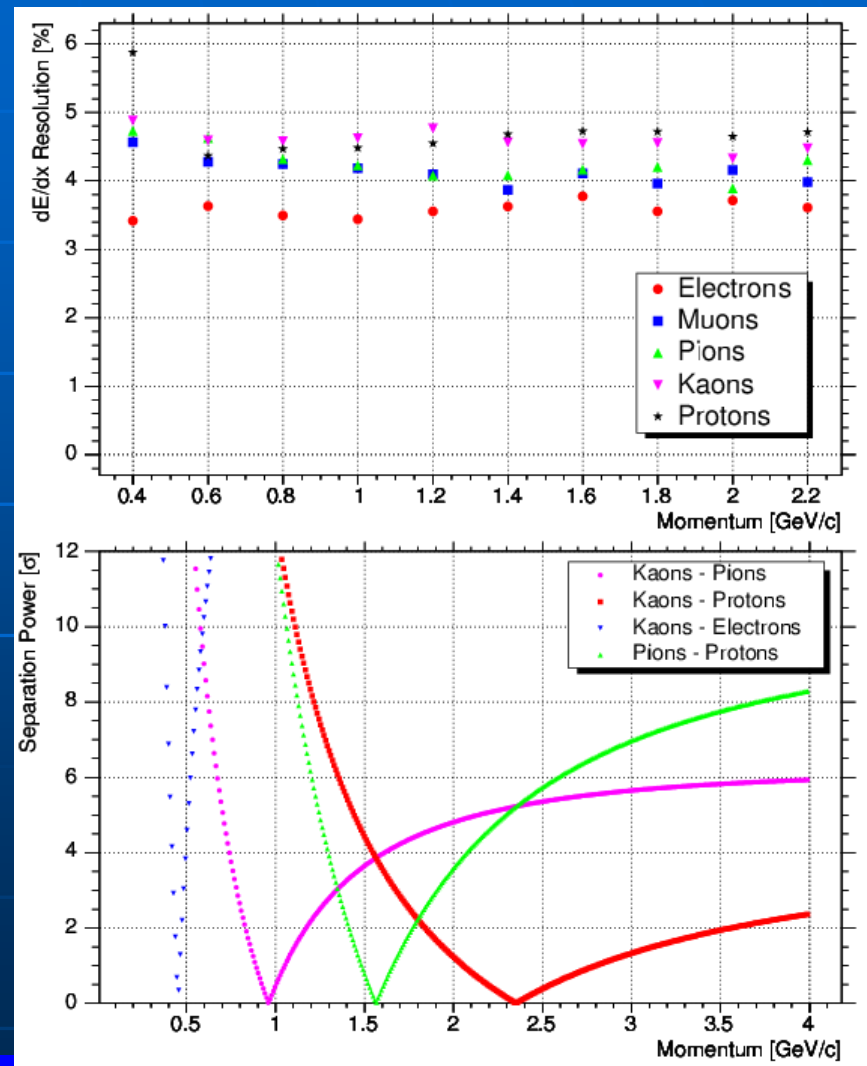
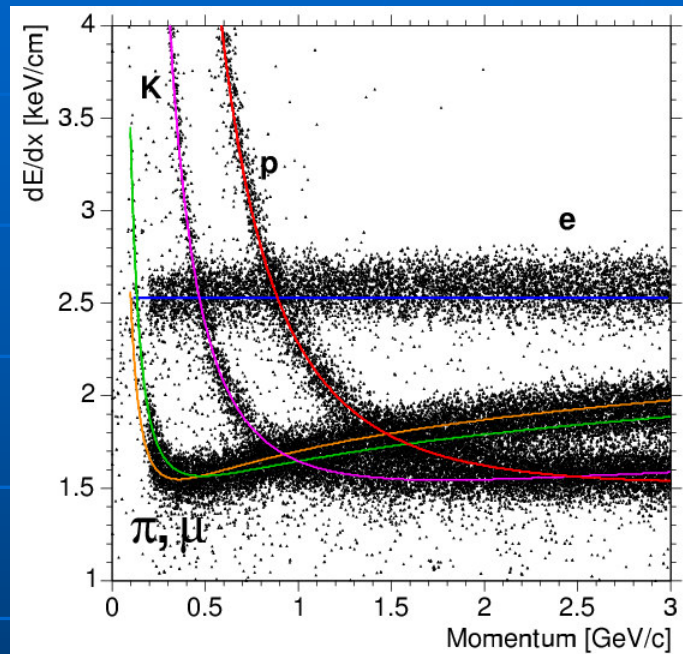
TAG PID: PANDA Acceptance



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TAG PID: TPC Parametrization



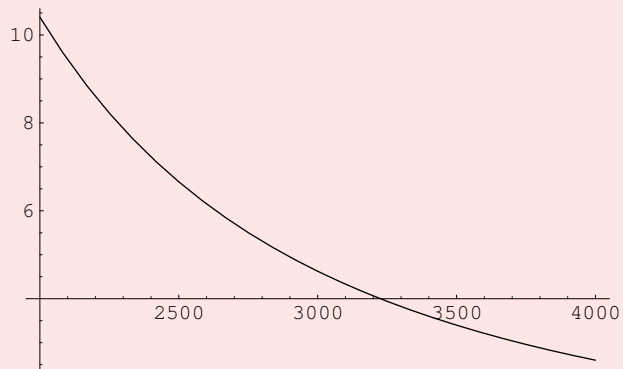
$$\text{Sep. Pow.} = 2 * |I1 - I2| / (\sigma_{I1}/I1 + \sigma_{I2}/I2)$$

I is equ. dE/dx of the resp. particle.
(resolution 5%)

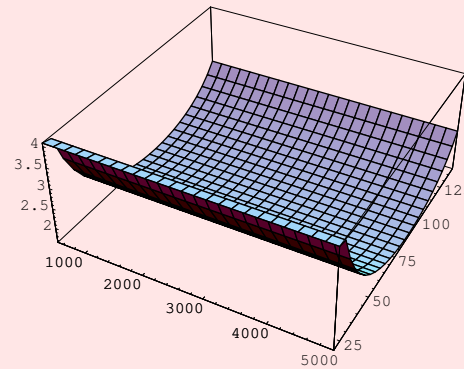


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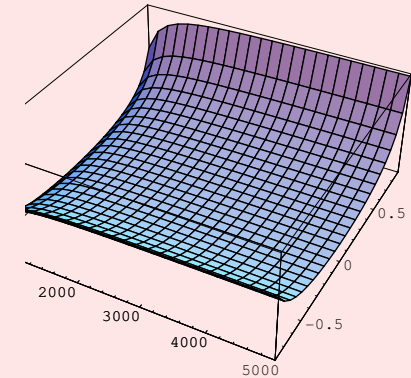
TAG PID: DIRC Parametrization



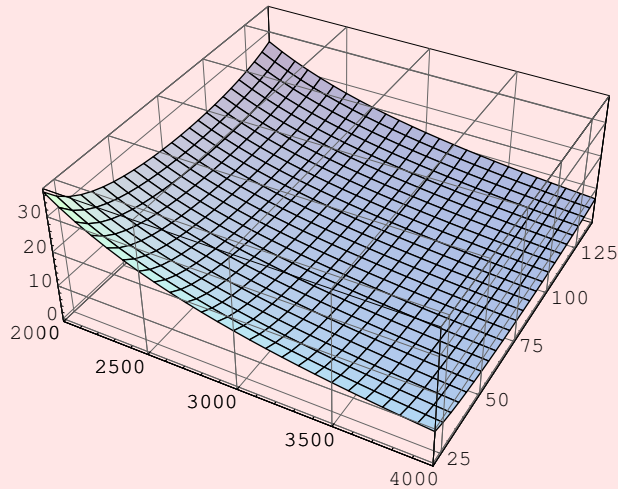
n sigma vs P



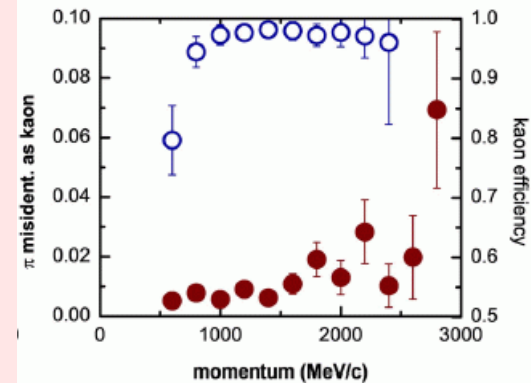
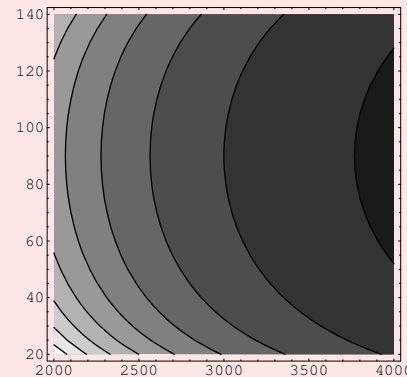
Path length



Photons produced



N sigma vs P vs Theta

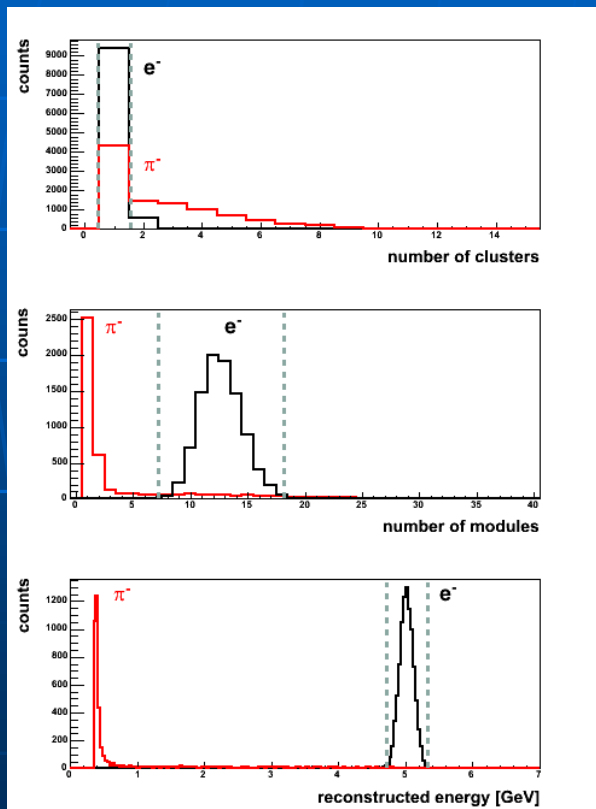




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TAG PID: Forward Calorimeter

Up 5 GeV/c down 1 GeV/c



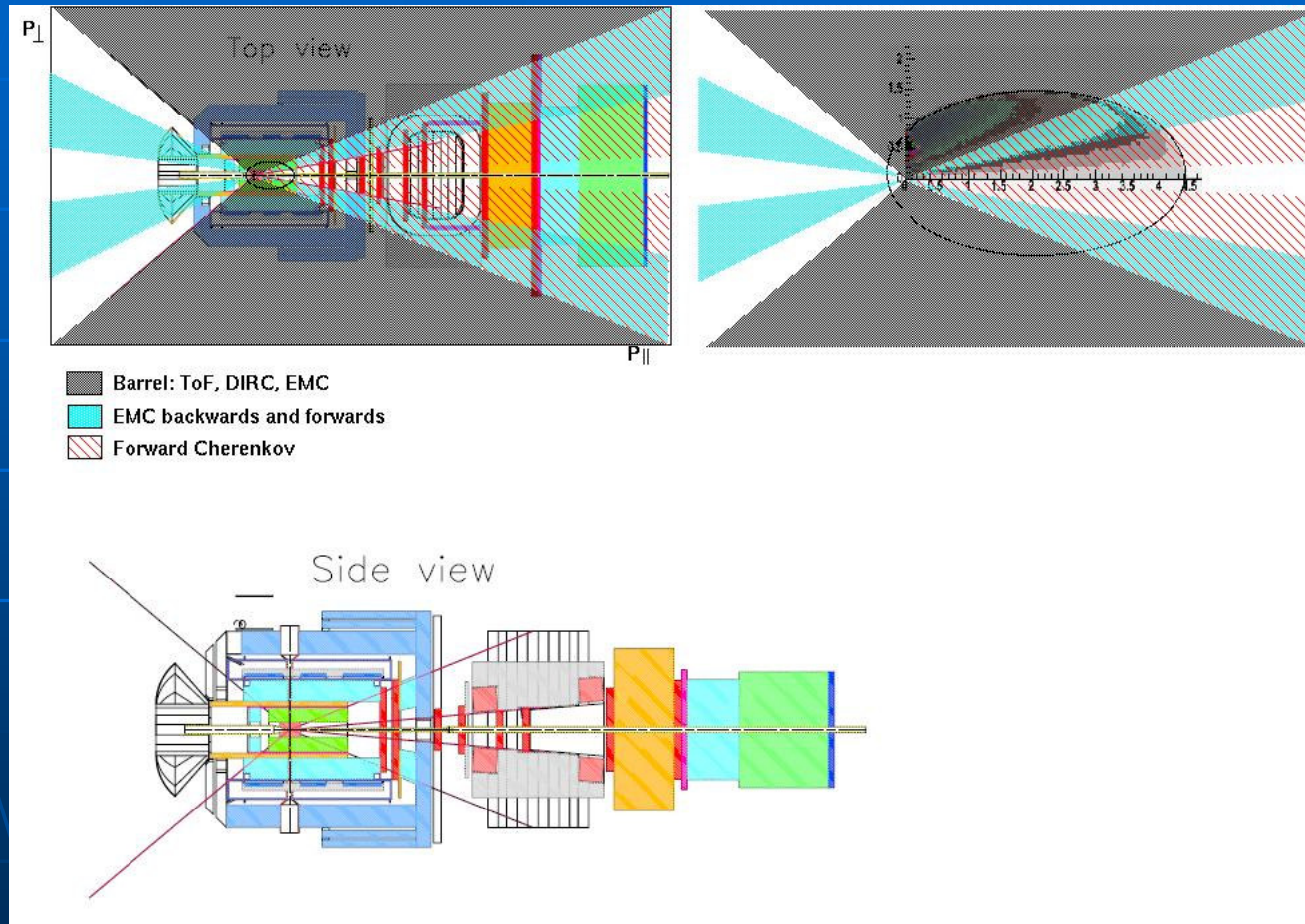
| Module size | e^- identified | n^- identified as e^- |
|-------------------------------|------------------|---------------------------|
| $30 \times 30 \text{ mm}^2$ | 84.6% | 0.2% |
| $55 \times 55 \text{ mm}^2$ | 93.3% | 0.4% |
| $110 \times 110 \text{ mm}^2$ | 97.4% | 0.8% |

| Module size | e^- identified | n^- identified as e^- |
|-------------------------------|------------------|---------------------------|
| $55 \times 55 \text{ mm}^2$ | 96.2% | 4.7% |
| $110 \times 110 \text{ mm}^2$ | 98.1% | 8.7% |



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Agenda of the second meeting:

- **Pion - Electron Separation with EMC and DIRC ..**

Talk by Thierry Hennino, Orsay

- **Common Plots for Separation power**
- **Discussion (Phase Space Calculations)**
- **Tasks**

next VRVS meeting



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Communication:

- Meetings and/or Work shops
- one central person who collects and reports (chair?)
- PID TAG - Wiki

Working sceme:

- Invitation of experts (from tracking, computing...)
- Asking for distinct simulations



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AGENDA of the first meeting

- Global PID Requirements, G. Schepers
- First Questions to ask
 - Specific Properties of Detectors
- Working Sceme
- Communications
- Tasks



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