

Status Endcap Disc DIRC TDR

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PANDA Collaboration Meeting 17/1

PID Cherenkov

March 7th 2017

2017 TDR

1. Executive Summary
2. The PANDA Experiment
 - 2.1. The PANDA Experiment
 - 2.2. The PANDA Detector
 - 2.3. PID System
3. Design of the Disc DIRC
 - 3.1. Overview
 - 3.2. Goals and Requirements
 - 3.3. Detector Design
 - 3.4. Reconstruction
4. Detector Components
 - 4.1. Optical System
 - 4.2. Photon Sensors
 - 4.3. Frontend Electronics
 - 4.4. Detector Control, ...
5. Performance
 - 5.1. Expected Detector Performance
 - 5.2. Prototype Tests
6. Mechanics and Integration
 - 6.1. Design Approach
 - 6.2. Cooling and Gas System
 - 6.3. Cable Routing
 - 6.4. Assembly
 - 6.5. Maintenance
7. Project Management

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Additional plots to verify design choices (anode segmentation, plate thickness, number of FELs per ROM, ...)

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Prototype tests for individual components are now integrated into the dedicated component sections (e.g. QA measurements for optics, MCP-PMTs, TOFPET)

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 - Extended MC studies regarding the performance of the final detector. Summary of full system prototype tests (testbeam campaigns)**
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Updated chapter on mechanics and integration including early prototyping and updated CAD

- Radiation hardness of optical components:
 - no new results, link to Barrel DIRC TDR and papers
- MCP-PMT measurements (lifetime, magnetic field, ...):
 - join Alberts part and Julians results
 - update figures and numbers if necessary

- Optimal PID performance can only be achieved with a complete quadrant
- Design verification has to be done by achieving an agreement between Monte-Carlo simulations and prototype measurements for:
 - single photon resolution, which depends on
 - ▶ tracking of the charged particle
 - ▶ wavelength interval
 - photon yield

- Additional design options are evaluated:
 - other MCP-PMT photocathode options
 - different (additional) filter options
 - number of ReadOut Modules (ROMs)
 - air-gap vs. cookie between FEL and MCP-PMT



see talk by M. Schmidt

- Regular, weekly internal discussion in Giessen
- 03/31: First draft of Chapters 4 and 5 (for Cherenkov-group internal review)
- 04/21: First draft of complete TDR (for Cherenkov-group internal review)
- 05/12: Updated version of TDR to Cherenkov group
- 05/24: Decide if draft is ready for submission to collaboration and for discussion in Panda June meeting

DIRC 2017 International Workshop on
Fast Cherenkov Detectors
Photon detection, DIRC design and DAQ
August 7-9, 2017
Castle Rauischholzhausen
Justus-Liebig-Universität Gießen



DIRC design Novel developments and progress in the detection of internally reflected Cherenkov photons.

ps timing Readout electronics with time resolution in the 10 - 100 ps regime.

fast DAQ Data acquisition for Cherenkov detectors with architectures viable in the 10 MHz region.


single photon detection Fast photodetectors for the detection of single photons. Influence of strong magnetic fields and related issues.

For more information and registration, visit:
www.uni-giessen.de/dir17

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Local organizers:
Simon Bodenmühl, Michael Düren, Erik Etzelmüller, Klaus Föll, Avelik Hayrapetyan, Christian Henz, Daniela Museaus, Julian Rinke, Mustafa Schmidt, Haiko Stenzel



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save the date!