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

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External Contributions

- 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

Design Verification

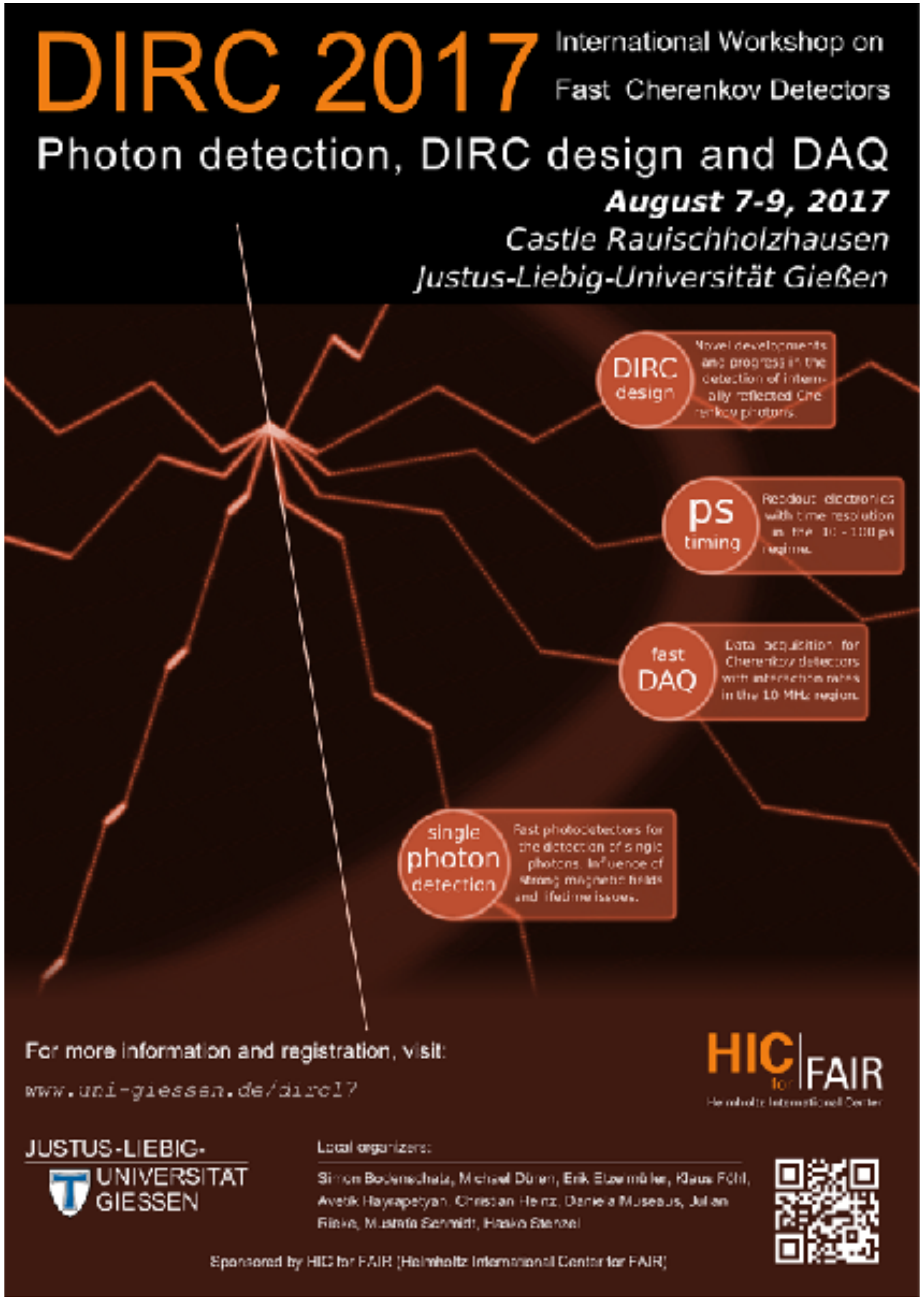
- Optimal PID performance can only be achieved with a complete quadrant
- Design verification has to be done by achieving an agreement between Monte-Carlo simulations and prototype measurements for:
  - single photon resolution, which depends on
    - tracking of the charged particle
    - wavelength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

Time Line

- 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

August 7-9, 2017

Castle Rauischholzhausen

save the date!