

White paper organization

5.1 Detector Concept

5.1.1 Charged Particle Identification at SuperB

5.1.2 BABAR DIRC

5.2 Barrel PID at SuperB

5.2.1 Performance Optimization

5.2.2 Design and R&D Status

5.3 Forward PID at SuperB

5.3.1 Motivation for a Forward PID Detector

5.3.2 Forward PID Requirements

5.3.3 Status of the Forward PID R&D Effort

References

Comment:

- We should use as much material from the White paper as possible. Basically leave the old text there and only insert paragraphs with some new items.

X. Topics for PID in TDR

Task written by:

X.1. Summary of Physics Requirement and Detector Performance goals

X.1.1. Physics requirements

X.1.2. Detector concept

X.1.3. Charged Particle Identification

Cincinnati, Maryland

SLAC

Cincinnati, Maryland

X.2. Particle Identification Overview

X.2.1. Experience of BaBar DIRC

X.2.2. Barrel PID: Focusing DIRC (FDIRC)

SLAC, LAL

Vavra

X.3. Projected Performance of FDIRC

X.3.1. Reconstruction

X.3.2. MC Simulation

- Fast simulation

- Full simulation

X.3.3. Effect of Background on performance

LAL + others

Cincinnati

Maryland

Maryland, SLAC

X.4. The Barrel FDIRC Detector Overview

X.4.1. Detector layout

- Overall figures

X.4.2. Impact on other systems

X.4.3. Mechanical support

X.4.4. Photodetectors

- Photon Detector choice

- Modularity: packing fraction

- Photon detector mechanical support

- Optical coupling of detectors to FBLOCK

- Temperature requirements

- Rates and aging issues in H-8500 PMTs

- Magnetic shield of H-8500 PMTs

- Prediction of number of photoelectrons per ring

Vavra, Padova, Bari

SLAC, Padova, Bari

Vavra, Padova, Bari

Vavra, Trieste, Bari

Vavra, Padova, Bari

Vavra, Padova, Bari

Vavra, Padova, Bari

Vavra, Padova, Bari

Vavra, Trieste

Vavra, Padova, Bari

Vavra

X.4.5. FDIRC Mechanical Design

- Description of BaBar bars, bar boxes
- Fused silica optics: New Wedge and FBLOCK
- Gluing Wedge to Bar Box Window
- Gluing FBLOCK to Bar Box Window
- Radiation damage of optical components
- Fbox: Mechanical support of the Fused silica optics
- Support of Fbox in the SuperB magnet
- Bar box storage at SLAC
- BaBar support structure and new FDIRC
- Background shielding to protect electronics & detectors
- Bar box shipment to Italy

SLAC
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X.4.6. Electronics readout, HV and LV

- FDIRC electronics (Amp/TDC/ADC)
- Motherboard
- Support services
- HV power supplies
- LV power supplies

LAL
LAL, Padova, Bari, SLAC
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LAL, Padova, Bari, SLAC

X.4.7. Laser calibration system

- Optics of calibration
- Laser and fiber optics choice

Vavra, Maryland
Vavra, Maryland

X.4.8. Integration issues

- Background shield and access to detector maintenance
- Earthquake analysis of FBLOCK & bar box structure
- PMT protection (large backgrounds, helium)

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Padova
Vavra, Bari

X.4.9. DAQ and computing

- Cabling and Access

LAL, Padova, Bari

X.4.10. FDIRC R&D Results until now

- Test beam results from the 1-st FDIRC prototype
- CRT test results from the 1-st FDIRC prototype
- Scanning setups to test H-8500 PMTs and Electronics

Vavra
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Vavra, Maryland, Trieste,
Bari, LAL

X.4.11. Ongoing FDIRC R&D

- Experience with the final FDIRC prototype in CRT

Vavra, Padova, Bari

X.4.12. System Responsibilities and Management

- Management structure
- Institutional breakdown by task

SLAC, LAL, Padova, Bari
SLAC, LAL, Padova, Bari

X.4.13. Cost, Schedule and Funding Profile

- Budget
- Schedule and Milestones
- Critical path items

**Vavra, Padova, Bari, LAL,
Trieste, Maryland
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Trieste, Maryland
Vavra, Padova, Bari, LAL,
Trieste, Maryland**

X.5. Forward option

X.5.1. Introduction

- Physics motivation
- Outline of FTOF detector technology

**Maryland, LAL
LAL, SLAC**

X.5.2. Committee recommendation

Maryland

Comment on Forward option:

- The committee evaluating the forward PID option concluded:
 - a) The physics gain is small (2-5%).
 - b) We should leave a gap big enough for a thin forward detector, for example FTOF.
 - c) The proponents must show results from a real prototype before it can be considered.
- Therefore, it seems to me, that the TDR Forward chapter should be brief, as we have not done enough at this point.
- Word for possible cost of FTOF:
 - a) Fused Silica tiles (12+2): ~122k
 - b) SL-10 tubes: 12 x 14 x \$10k ~ \$1.7M
 - c) Electronics: ~\$100k
 - d) Mechanics: ~\$100k

Additional general comments:

- We are asked to provide explicit names of editors for individual chapters. Therefore we are asked for volunteers to be able to convert institution assignments in red into names.
- Total page count should probably be less than ~30 pages, judging from what was done for BaBar. Out of that we probably should have 3-4 pages for Forward section. (White paper had ~10 pages for PID)
- We should have the plan available by the London meeting.