PHENIX

MUON IDENTIFIER

OVERVIEW AND UPDATE

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Outline

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- Status Report
- New Documents
- Next Talks
- Remaining Design Issues
- Straw Man Proposal

Status Report

- Successfully passed Preliminary Design Review (11/20/96). Many, but not all, homework items addressed.
- Full-scale prototype has all 4.0 m tubes installed.
- Still need to flip panel and install all 5.8 m tubes.
- Load tests successful. See the movie!
- All internal gas tubing for long tubes installed. Fits well with one inlet and one outlet per 24 tubes.
- Have design for HV distribution and readout cables.
  - Proposed new "HV board" simplifies assembly, reduces assembly time and may actually reduce costs.
- Have tested tubes with different gas mixtures and HV settings.
- Have begun to test possible driver preamp.
- Proportional mode works well.
- Ganging staggered tubes passively at the detector works well.

Status Report

- Have not yet determined optimal gas mixture:
  - Some gas mixtures (Ar:CO_2) without CF_4 look *possible*.
  - Some non-flammable mixtures look *possible*.

- New schedule requires:
  - Install last panel by 11/1/98.
  - Have BNL muon factory start routine operation 10/1/97.
  - Prepate BNL muon factory summer 1997.

New Reports

- Revised MuID Design and Services Note (phenix-muon-96-9)
- QA Plan
- Assembly Factory Proposal

Next Talks

- Update on Mechanical Design and Load Tests
- MuID Movie
- MuID R&D Update
- MuID Assembly Sequence, Factory Design, and Personnel Requirements
  - Understand MuID space and manpower requirements well.
  - Problems with proposed building (905).
  - Will iterate here and discuss with Sam. Muon Factory Meeting to be held on 3/20-21/97 at BNL.

Remaining Design Issues

- Need to either *decide* or agree on *decision process* for the following:
- Proportional versus streamer mode?
- Ganging X and X' (and Y and Y') into single readout channels inside the panel?
- Internal driver preamp?
- Gas:
  - Will it contain (enough) CF_4 to require recirculation?
  - When and how will baseline selection be made?

Other Issues

- Preparing for Muon Final Design Review (tentatively April 10-11)
- Assembly factory issues (building, building modifications, setup schedule, who).
- Constructing small panels in Japan
- Status book update
- Revised WBS (cost, schedule)

Straw Man Proposal

We propose the following be the "baseline" in a self-consistent proposal. In other words, this is the plan unless future R&D shows otherwise "soon enough" to be possible to implement.

- Mount HV components on pre-assembled printed boards.
- Operate in proportional mode.
- Gang staggered pairs together into single channels inside panel.
- Use simple preamp cable driver inside panel.
- Use shielded twisted-pair readout cable.
- No CF_4. No recirculation.

CF_4

- VENTING:
  - (1 exchange per day) x (43 m^3/exchange) x 10% CF_4 = 4.3 m^3 CF_4/day
  - 4.3 m^3/day x (\$2k / 8 m^3) = \$1000/day
  - \$200k/year to vent 10% CF_4!
  - Prohibitive!?
- RECIRCULATING:
  - (\$20k/year marginal cost for MuTR) x (30 times bigger volume) x (1/3 of the exchanges per day) x 40/52 x 1.05 = \$165k/year marginal cost to recirculate
  - Prohibitive!?

Summary

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- Need to decide upon as many remaining design issues as possible

- Agree on decision process for the rest

- Deadlines