

Muon - RPC system

- Goals, plans unchanged by IDAG validation

– LOI

- The primary aim of the muon system R&D is to validate both possible detector choices and to develop cost-effective read-out designs. The RPC R&D effort is focused on adapting the KPIX ADC to digitize RPC signals[4]. Other studies will measure the aging characteristics of IHEP RPCs and search for gas mixtures or cathode materials with better aging properties[5]. The groups involved with the scintillating strip option will evaluate SiPM devices from different manufacturers and develop mounting, temperature control, and calibration designs[6]. Both the KPIX and SiPM efforts will be applicable to the HCAL RPC and scintillator detector options. Further details of the Muon System R&D plans can be found in the online appendices and the individual R&D proposals [4, 5, 6].

IDAG

- Additionally, R&D programs should contribute to design choices in areas where different options appear possible (e.g.: detector technology for the vertex detector and its readout; for the active elements in the hadronic calorimeter and in the muon detector/tail catcher; options for digital readout of the electromagnetic calorimeter; options for high-performance calorimeters based on the alternative approach of multiple readout.)

RPC Studies – Princeton C. Lu

- New LCDRD grant #6.19
 - “Aging Study for SiD Hcal and Muon System RPCs” (A.J.S. Smith)
- FY2009 Milestones:
 - 1. Purchase the optical microscope, open the previously aged RPC and survey the inner surface;
 - 2. Set up expanded cosmic-ray-trigger counter array;
 - 3. Prepare 5 new BESIII-type test RPCs;
- **Project Activities and Deliverables Beyond FY2009**
 - In the following years we will collaborate with IHEP and Gaonengke to try out various
 - new Bakelite electrodes:
 - 1. Bench top test to make sure the robustness to HF;
 - 2. General performance test for the RPC made out of the new Bakelite electrode;
 - 3. Real aging test for the new RPC.

RPC Studies –UW/SLAC Band

- Finish off 07 LCDRD grant study of KPIX readouts
- FY09/10 goals
 - Re-establish KPIX readout of small test RPCs
 - Minimize noise/characterize resolution
- SLAC FWP to study and autopsy BaBar RPCs removed from detector
 - Setup new cosmic ray test stand
 - Correlate physical changes in bulk and surface resistivity with aging related changes in efficiency and rate