Status of Aerogel Detector System

For High-pt Upgrade Team

BNL

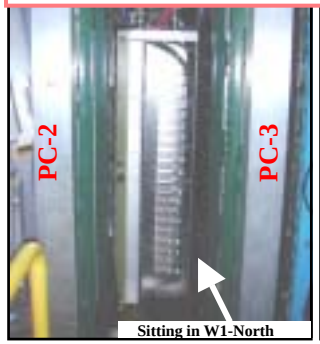
CNS-Tokyo

Dubna

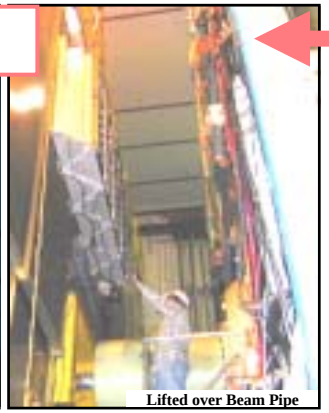
Tsukuba

Current status (1)

Nov/4: Installed



Sitting in W1-North


Lifted over Beam Pipe

Nov/3: Transported to 1008-IR


Driving at RHIC-1005 corner

Oct/30:Construction Completed


At 510-highbay. With HV, LED, signal cable, gas tube

- 8 Gas manifolds, 80 T-shape gas connectors, internal gas tubing were mounted.
- Cables were mounted: 6 for HV, 160 for signal (PMT to preamp), 20 for LED.
- 80 Boxes tested (Light shield, LED amplitude → “Np.e. ~ 1” + “pedestal”).
- Internal survey (Nov/27) done.
- 2 wooden stoppers at the bottom for transportation

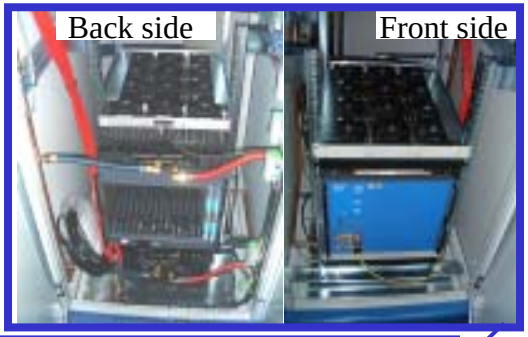
Oct/9~12:Boxes Integration at 510

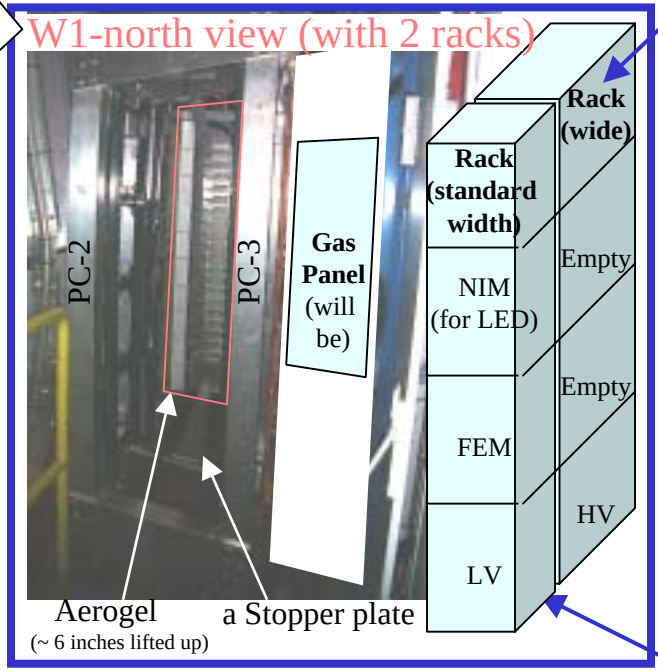

Assembling from bottom raw & put pre-amp (from left: M.Konno, N.Kurihara)

-80 Boxes are integrated
- 20 Preamps (for 80 boxes) were mounted.
- 80 Boxes production (w/HV isolation, LED exchanging, Light&Gas Shielding)
- 80 Boxes tested (Light shield).

Current status (2)

- ~ 6 inches lifted-up to move the rail to the gap btw. W1 and W2.
- Cable (6 HV, 20 LED) placed.
- Cable (20 signal (preamp to FEM), 20 preamp power) installed.
- "5 FEM + 1 controller + 1 communication board" were installed.
- HV crate (with 2 boards) installed.
  1 more module in hand,
  7 will be delivered from LeCroy for the run.
- 2 sets of LED driver installed





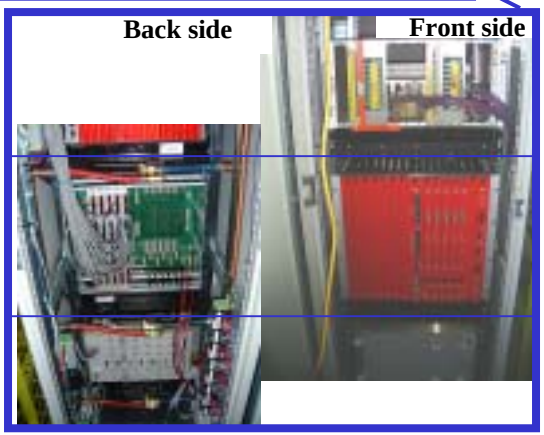
Expected Status on 11/24

- To be ready, which needs

(1) Power (with fuse boxes, test, and "blue sheet" checkout)
for FEM, preamp, HV, and NIM crates.
(2) Water cooling (with solenoid bulbs).
(3) N_2 circulation system (with ADAM read out).
(4) Survey with respect to the Phenix-arm.
(5) Read out fiber connection.
(6) Need to find LED trigger pulse generator (with stable (~ sub-ns on 40ns) width.
FYI: "~4 ns increase of width" ←→ "~5 times higher of LED intensity").
(7) Setup of PPG for the LED triggering.
(8) GTM (JH needs to test), DCM installation
(9) Test for post-installation.
(10) Readout test through the DCM.

- Also we need to make sure the SAFETY.

(1) We propose to put smoke detectors on the N_2 return path.
(2) Box-and-Frame-safety-ground needs to be attached to the Phenix-arm-ground.



Online Monitoring for Aerogel

N.Kurihara (CNS-U.Tokyo)

- Aerogel monitoring for shift crew

(To see hardware and data status or to find PMTs which dose not work fine)

ADC histogram

- Sum up all ADC value in one 1 dimension histogram.
- 1 dimension histogram of average p.e/events for each PMTs

TDC histogram

- Sum up all TDC value in one 1 dimension histogram.
- Average hit time for each PMTs

These macro will be updated on CVS in next week.

- Aerogel monitoring for experts

Check all PMT channels

- 1 dimension histogram (pre, post, TDC, pre-post)
- 2 dimension histogram (ADC value vs. TDC value)
- Correlation of 2 PMTs in one box

These macro will be updated on CVS in next week too.

Online Calibration for Aerogel

H.Masui (U.Tsukuba)

- Calibration parameters

  ADC (pass0)

  - Charge Calibration (ADC [ch] → $N_{p.e.}$)

  TDC (pass1 or 2) (need BBC/Tracking info.)

  - TDC gain parameter (TDC [ch] → Timing [ns])
  - Slewing correction [ns]
  - Timing offset [ns]

- Plan
  - by 11/30 : First version of Aerogel Online calibration code will be committed into CVS.
  - by 12/14 : Will be ready to Run4 Online calibration.