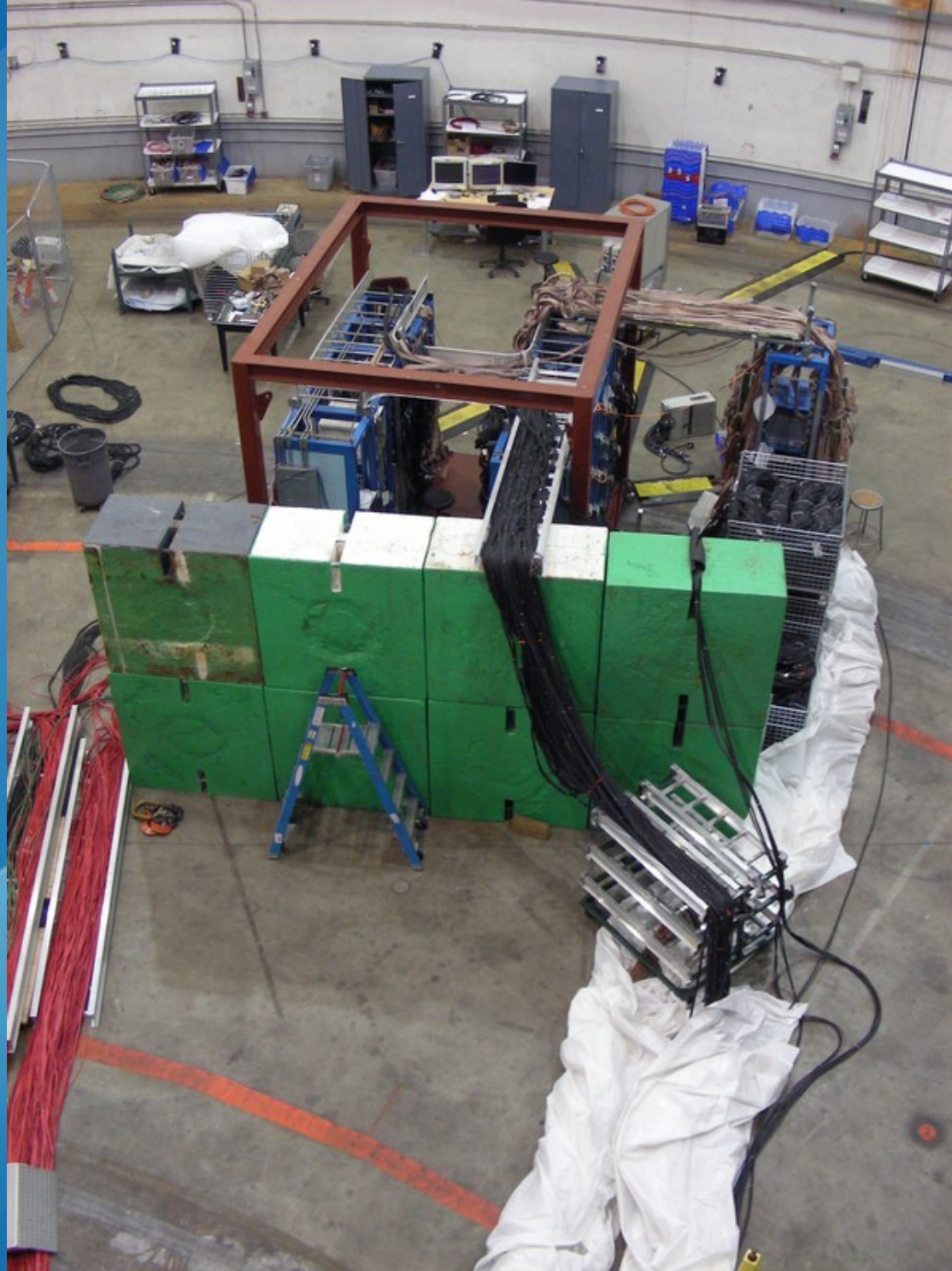


# BigBite Detector Package Status Update

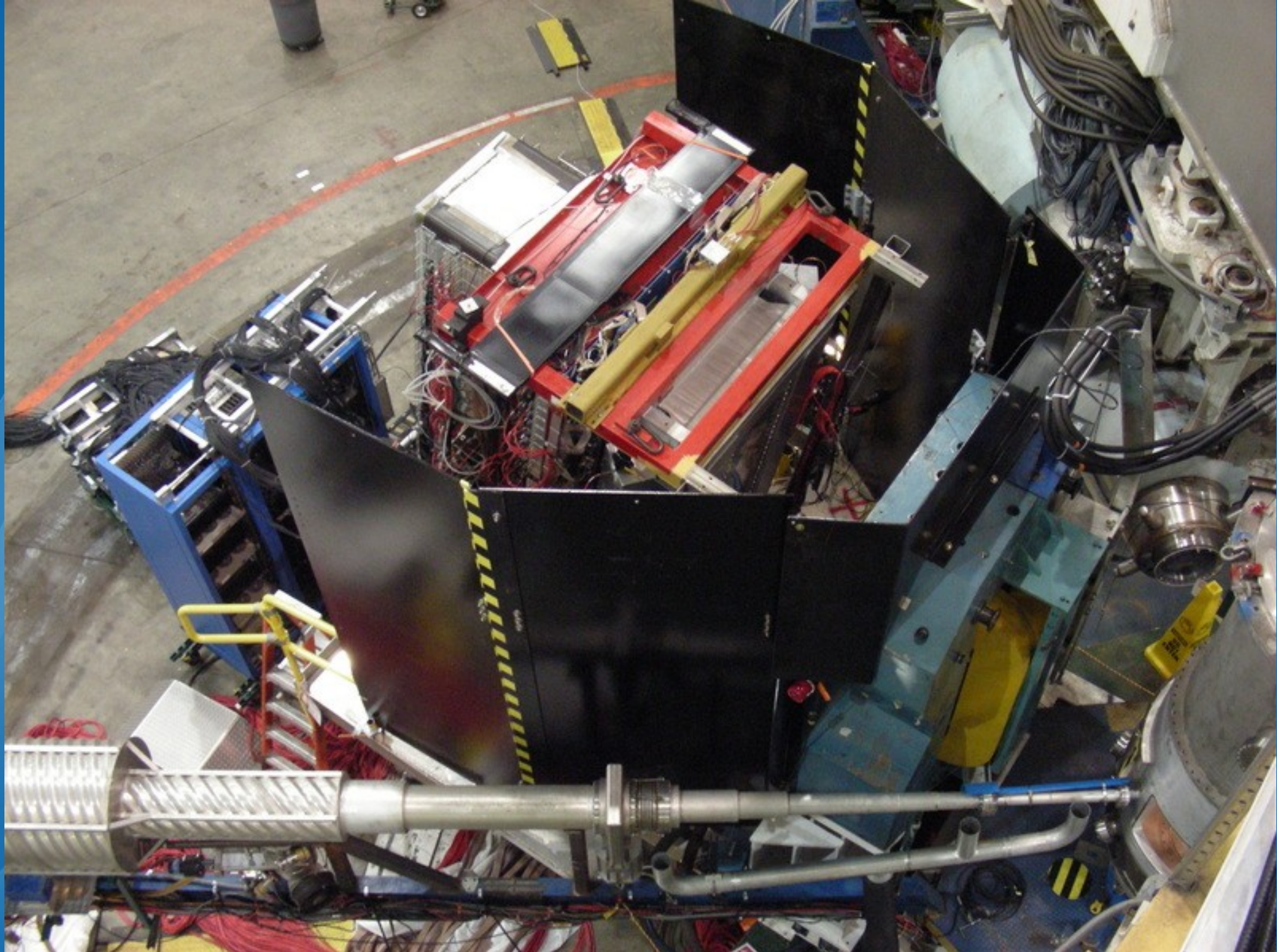
Brad Sawatzky

Hall A Collaboration Meeting  
June 13, 2008

Date	Event	Target	RHRS	LHRS	BigBite Hadron	BigBite Electron
<b>DONE</b>						
01/31/08	Install $\pi^0$ Experiment					
05/07/08	Run $\pi^0$ Experiment E04-007	LH2	+	+	+	
05/08/08	Install GEp/GMp Experiment					
05/16/08	Run GEp/GMp Experiment	LH2		+		(Calor. Only)
<b>Firm</b>						
06/10/08	Install Transversity/d2 Experiments					
10/10/08	Run Transversity Experiment E06-010/E07-013	pol.He3		+		+
<b>Tentative</b>						
01/17/09	E06-014: d2n			+		+
02/23/09	Install Ay/He3(e,e'd) Experiments					
04/12/09	Run Ay E05-015/E08-005	pol.He3	+	+	+	(Parasitic Recommission)
04/27/09	E05-102: He3(e,e'd)	pol.He3	+	+	+	
05/31/09	Finished					



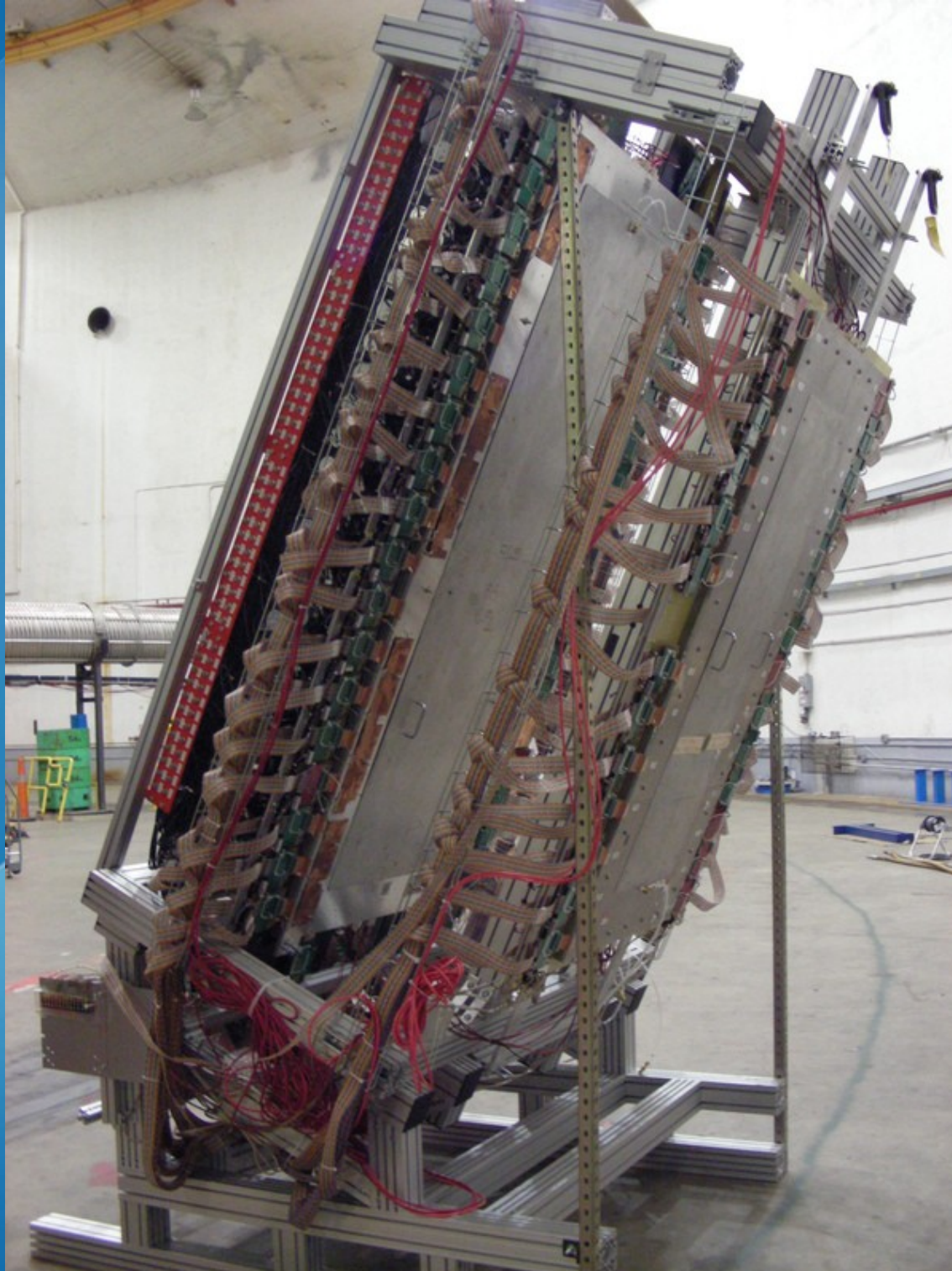




June 13, 2008

Hall A Collaboration Meeting





# Transversity Preparation

## BigBite Hardware Needed

- 3 MWDC
- Gas Cherenkov\*
- Pb-glass preshower/shower
- Scintillator plane
- DAQ
- Analysis software

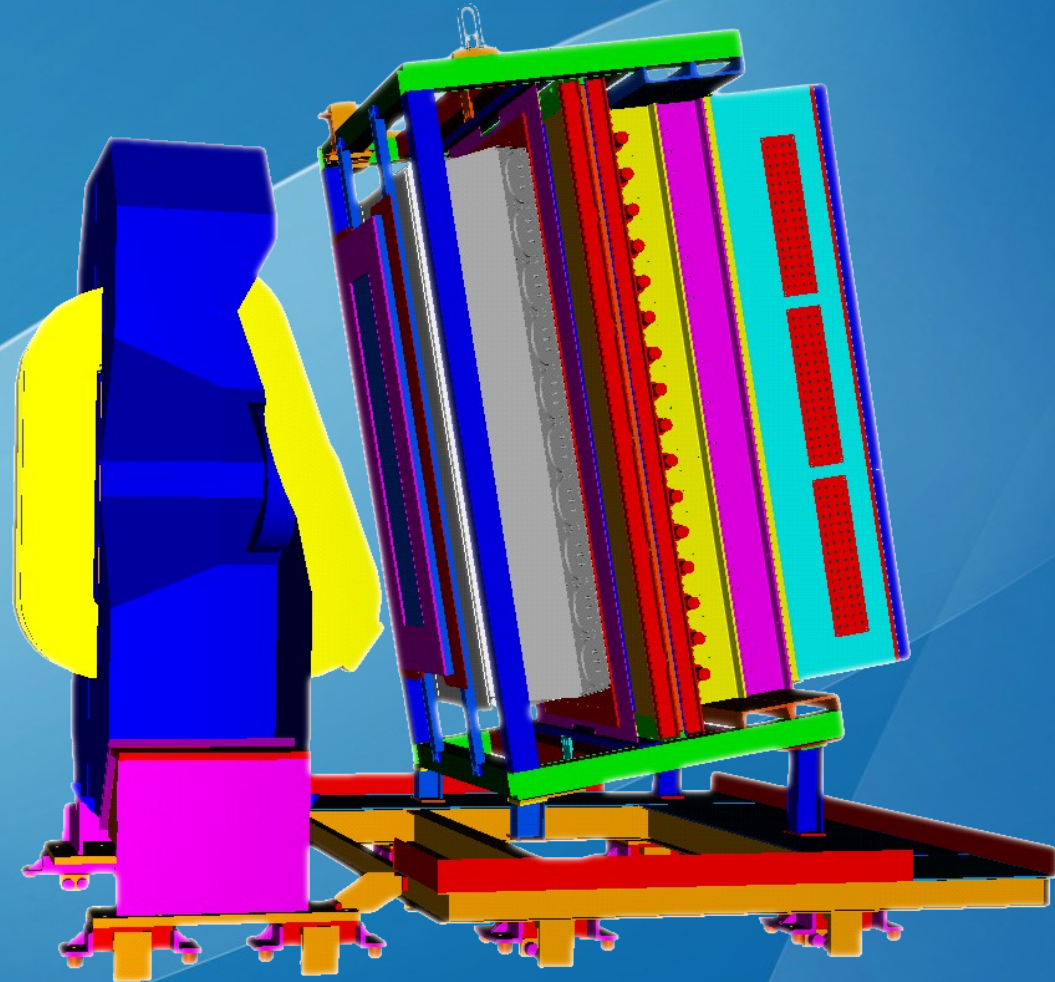
**All components have been tested during  $\pi^0$  and/or GEp/GMp**

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## LHRS Hardware (special)

- RICH

**\* Cherenkov still being worked on. The rest are in good shape!**





# RICH Upgrade Status / 10 June 2008

- RICH Assembled in Rome
- Gas-Tight tested
- PAD Chamber HV tested with CO<sub>2</sub>
- Ready for shipping (wooden boxes in 2 days)
- **SIZE: 2565 × 90 × 35 mm<sup>3</sup>**



# RICH installation schedule

Plan is based mainly on:

- Discussion with Jack, Vince and Alexandre.
- Minimization of risk to exposure of evaporated panels to air
- Stony Brook activities on the evaporator
- Holiday constraints (August) in Italy

## Evaporation/Integration/Test/Installation

From	To	Task
16/Jun	30/Jun	Shipping Rome→USA
07/Jul	19/Jul	Evaporation at Stony Brook University
19/Jul	26/Jul	Integration at JLab
27/Jul	08/Aug	Cosmic Test (Cherenkov on Quartz window)
08/Aug	31/Aug	Additional Tests or Fixes if needed
01/Sep	06/Sep	Prapare RICH for Installation
07/Sep	Milestone	RICH ready for HRS Installation
08/Sep	12/Sep	Installation in HRS
09/Oct	...	Commissioning and Data Taking

~ 2 – 4 days of contingency for each task (test excluded)

~ 1 month from RICH ready to experiment



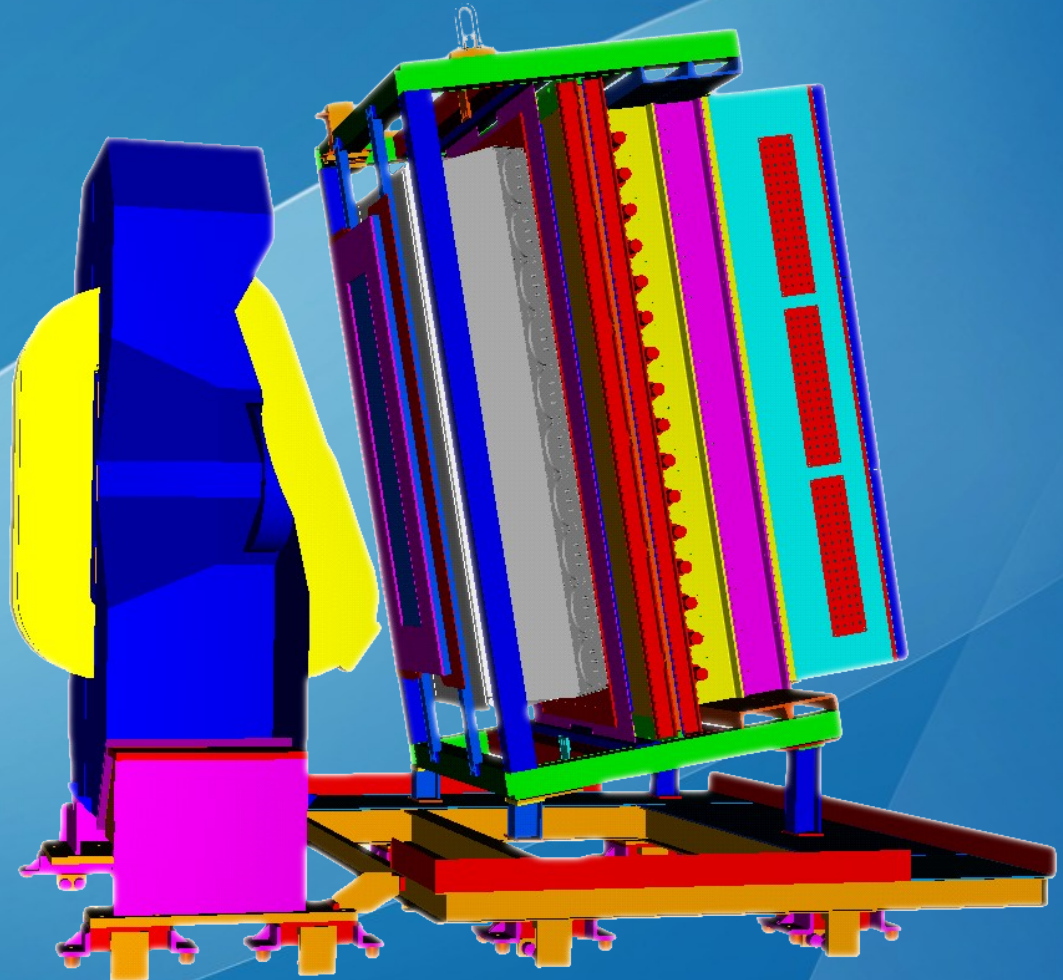
# JLab Resources needed for the RICH installation

- Space: According to Alexandre/Jack/Vince discussion RICH will be integrated (and tests ?) in the F-Wing Computer Center.
- Integration/test:
  - ① Clean room (tent) (approx. 1 week)
  - ② Glove Box and some space around + crane (1 month at least)
  - ③ Gases: Argon, CO<sub>2</sub> and mixer (flammable gas cannot be used in computer center)
  - ④ HV and DAQ (minimal system)
- Installation:
  - ① 2 mechanical extensions (reuse existing ones seems possible)
  - ② Freon Circulation system
  - ③ CH<sub>4</sub>
  - ④ DAQ

**Argon or CH<sub>4</sub> or iner gas must be flushed on the evaporated pad all the time after evaporation till end of experiment**

# $d_2^n$ Preparation

- BigBite Hardware Needed
- *Same config as Transversity*
- 3 MWDC
- Gas Cherenkov\*
- Pb-glass preshower/shower
- Scintillator plane
- DAQ
- Analysis software

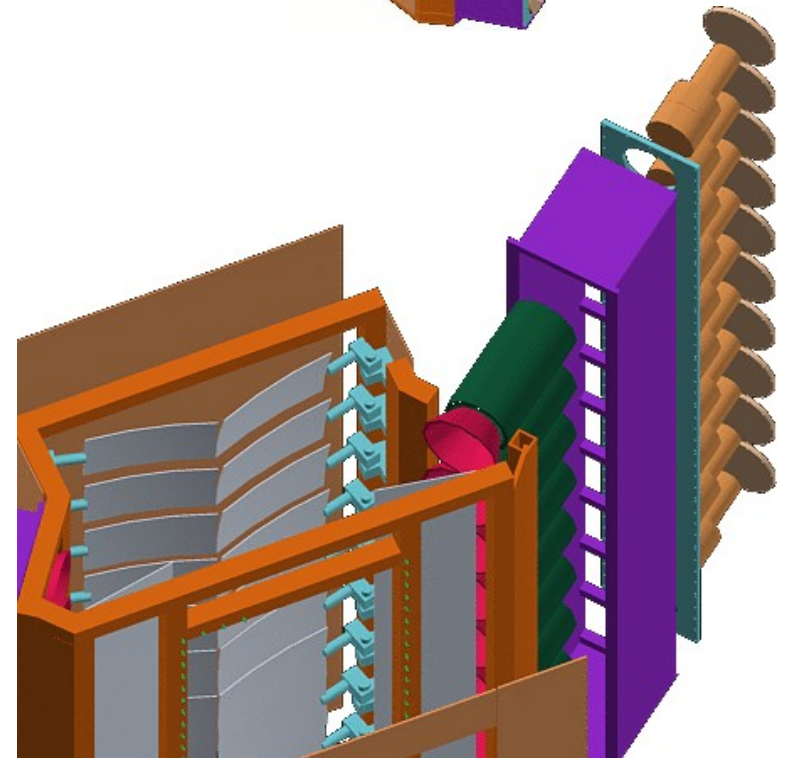
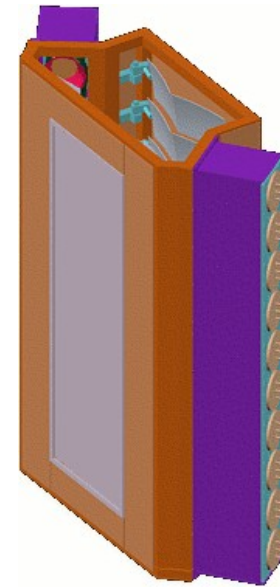


\* Cherenkov is a “must” for  $d_2^n$ .

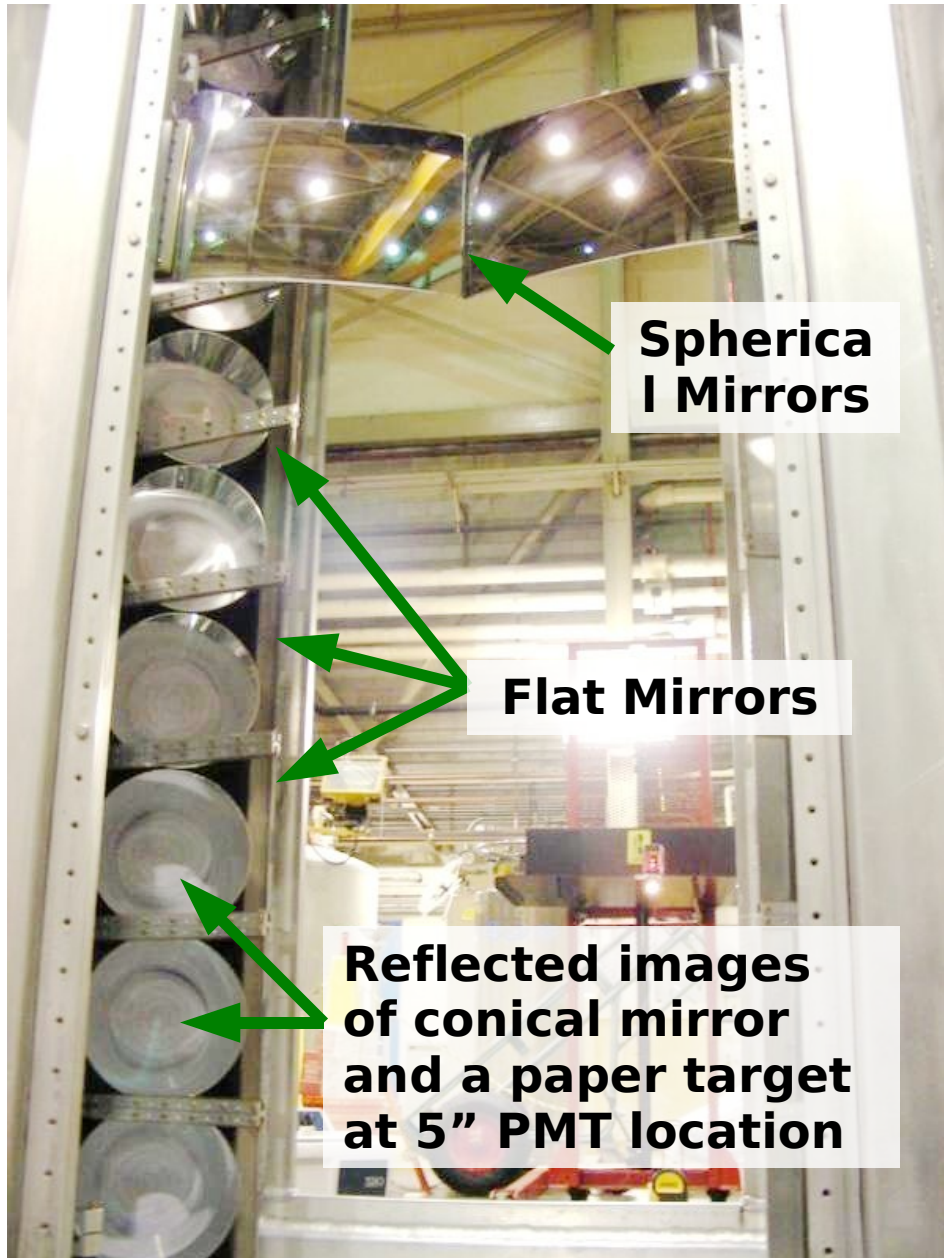


# BigBite Gas Cherenkov

- **New heavy gas Cherenkov for BB electron stack**
  - 200cm x 60cm x 60cm
  - 20 PMTs
  - 2 columns of 10 focusing mirrors
  - sandwiched between wire chambers
- **Cherenkov was assembled in May 2008**
  - no major assembly issues
  - patched a few pinhole leaks along weld joints and tank is now gas tight
  - rough estimate of gas consumption  $\sim 1 \text{ ft}^3/\text{day}$  (within initial projections)
- **Installed in Electron stack in time for parasitic tests during E08-007 (May—June)**
  - tank filled with production gas ( $\text{C}_4\text{F}_8\text{O}$ ) on May 29
  - $\text{C}_4\text{F}_8\text{O}$  is 'drop in' replacement for  $\text{C}_4\text{F}_{10}$  (but is  $<1/3$  the cost)
- **Analysis of the parasitic data is underway...**



# BB Cerenkov During Assembly (viewed from rear)





3<sup>rd</sup> Period: 2/23/09 – 5/31/09

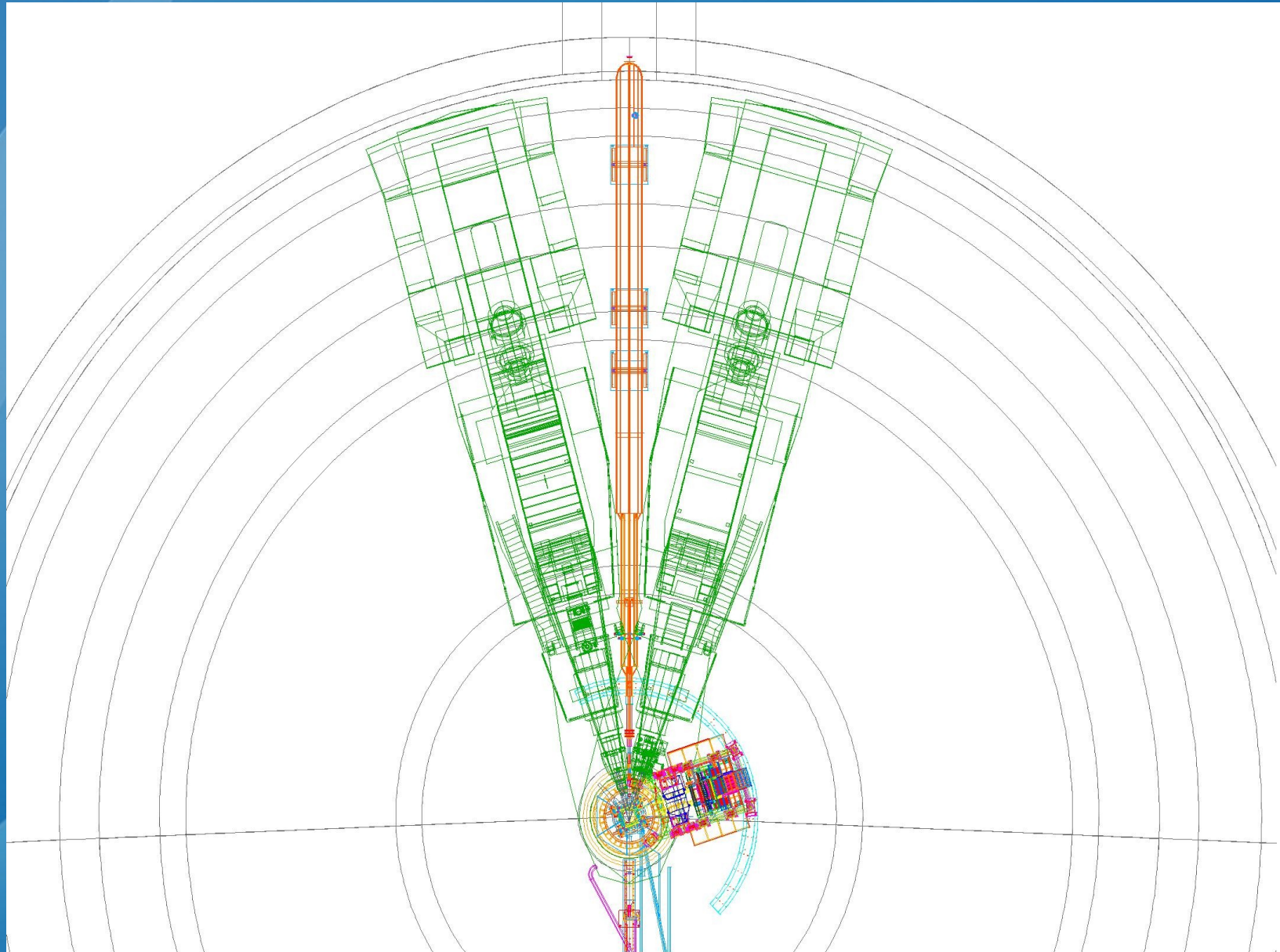
Ay / He3(e,e'd)

RHRS

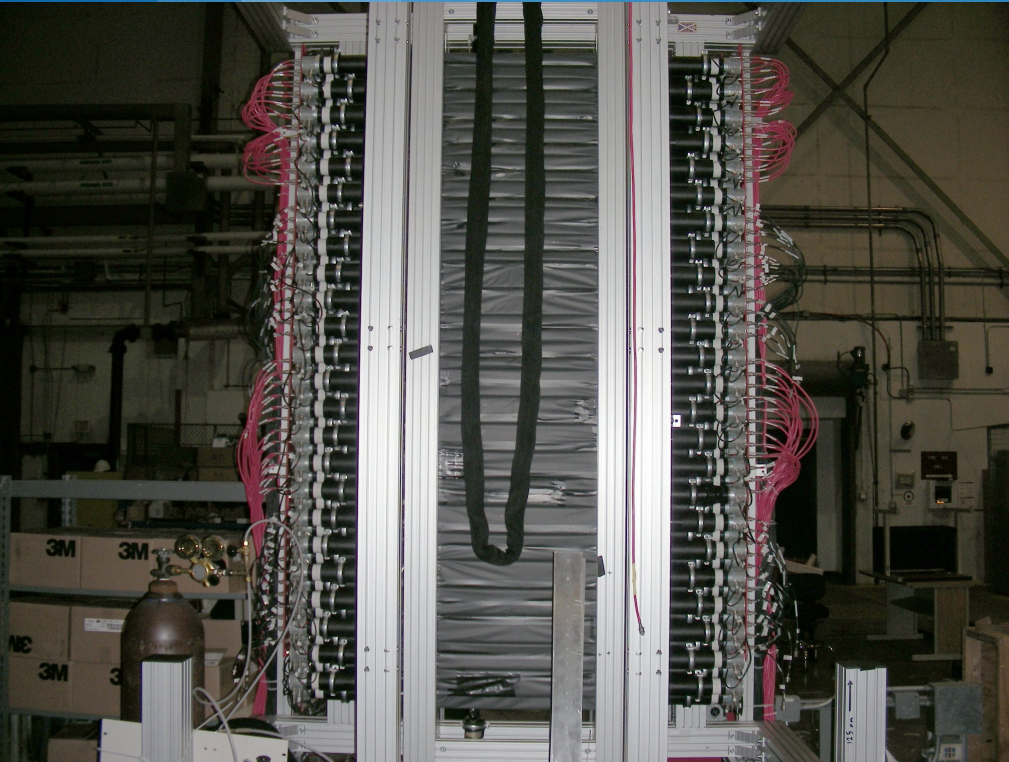
LHRS

BigBite Hadron

Neutron Detector







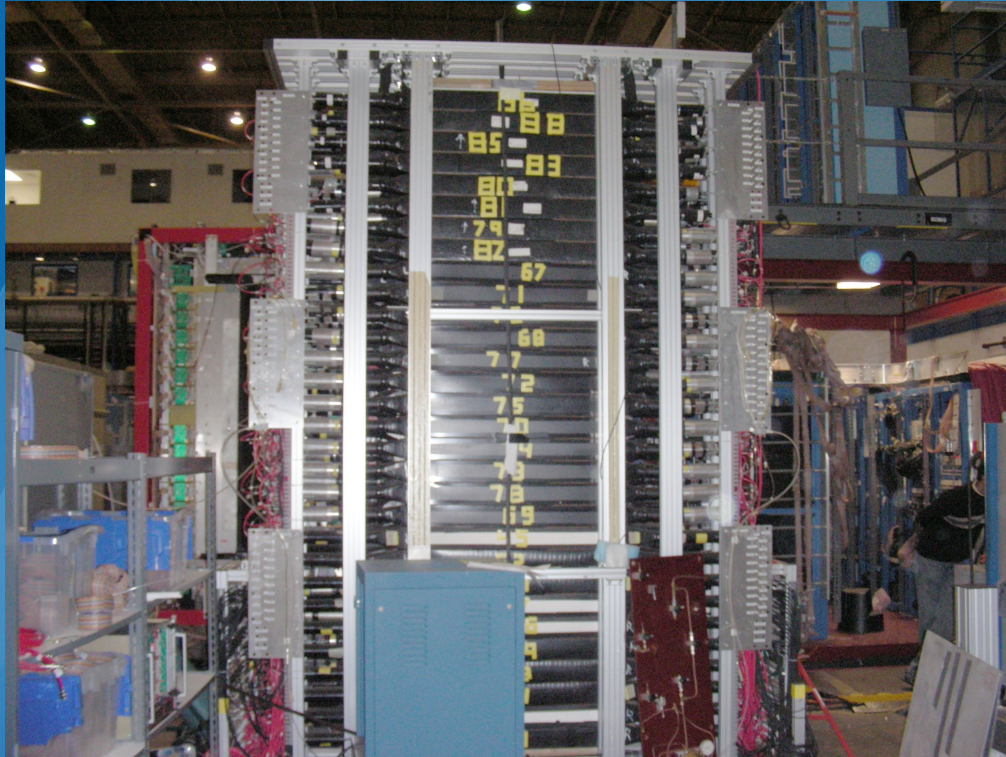
Front view of Hadron Package



Back view of Hadron Package

Was used for production during  $\pi^0$ .





Front view of Neutron Detector



Back view of Neutron Detector

- Test 88 scint. PMTs for signal (Done)
- Install and test veto bars

Date	Event	Target	RHRS	LHRS	BigBite Hadron	BigBite Electron
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05/07/08	Run $\pi^0$ Experiment E04-007	LH2	+	+	+	
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<b>Firm</b>						
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10/10/08	Run Transversity Experiment E06-010/E07-013	pol.He3		+		+
<b>Tentative</b>						
01/17/09	E06-014: d2n			+		+
<b>02/23/09</b> Install Ay/He3(e,e'd) Experiments						
04/12/09	Run Ay E05-015/E08-005	pol.He3	+	+	+	(Parasitic Recommission)
04/27/09	E05-102: He3(e,e'd)	pol.He3	+	+	+	
05/31/09	Finished					