

Happy  
**Festivus!**

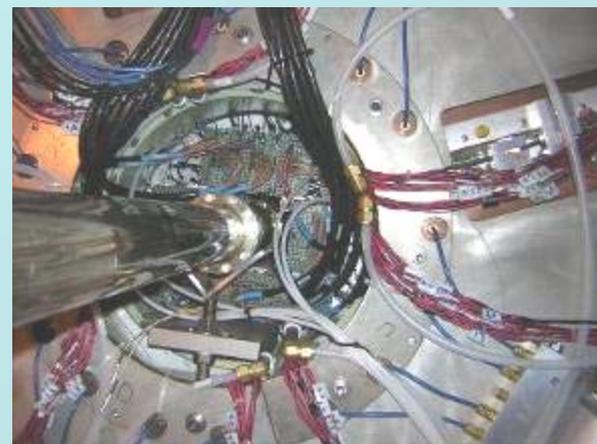
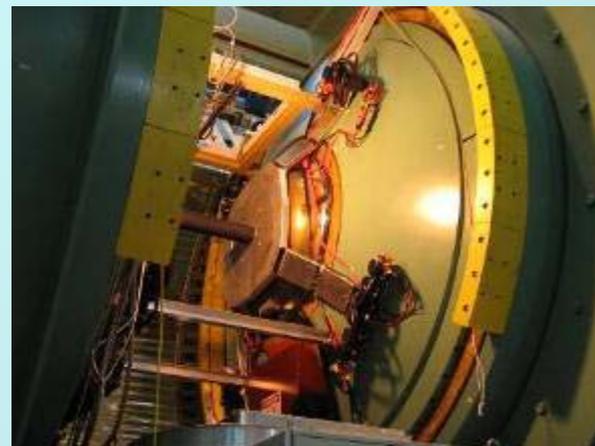
**PHENIX**  
**WEEKLY PLANNING**

12/21/06  
Don Lynch



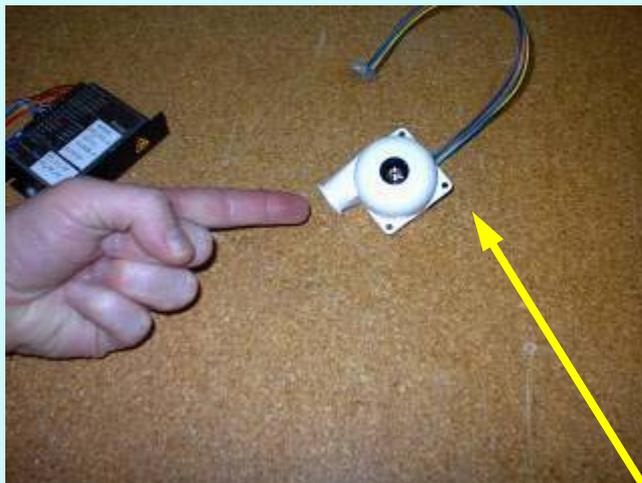
# Commissioning in Progress

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# HBD Electronics Cooling

TECHNICAL SUPPORT 2006



## Still Needed for Approval to Operate:

- Where will fan(s) be mounted? - *CM base "cubby hole" fan model and specs to be forwarded to Safety*
- Written design and operation description and- *To be forwarded to Safety*
- Order for 5 blowers & drivers (4 +1 spare) is in the works 1 set Received, 3 sets shipped 12/18, 1 set back ordered.



Blower

Speed Controller

# 4 X BD<sup>2</sup> Electronics Cooling

30 V, 10 Amp Power Suply  
(~1.5 Amps per blower)

Enclosure box  
with inlet filter

To HBD East  
North side

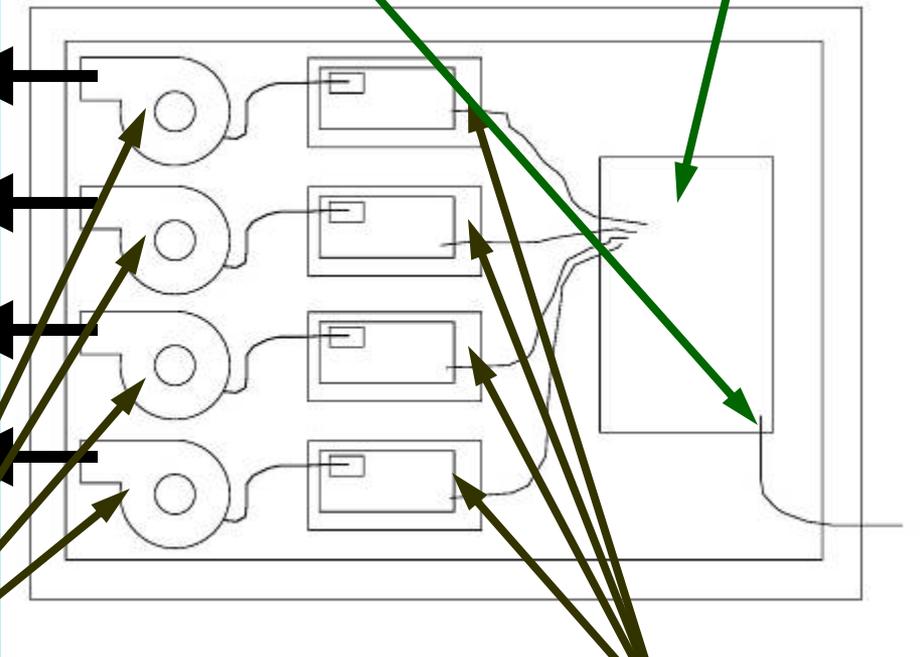
To HBD East  
South side

To HBD West  
North side

To HBD West  
South side

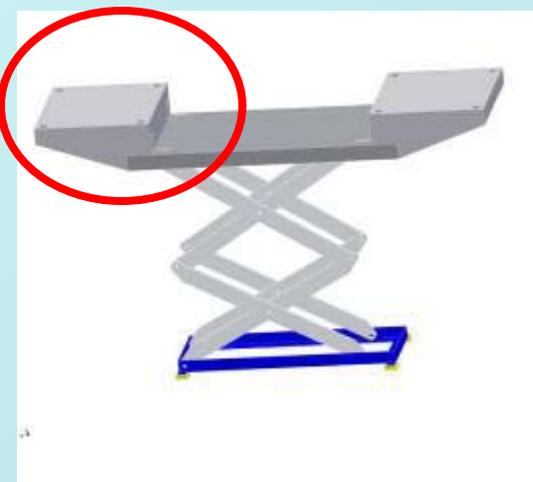
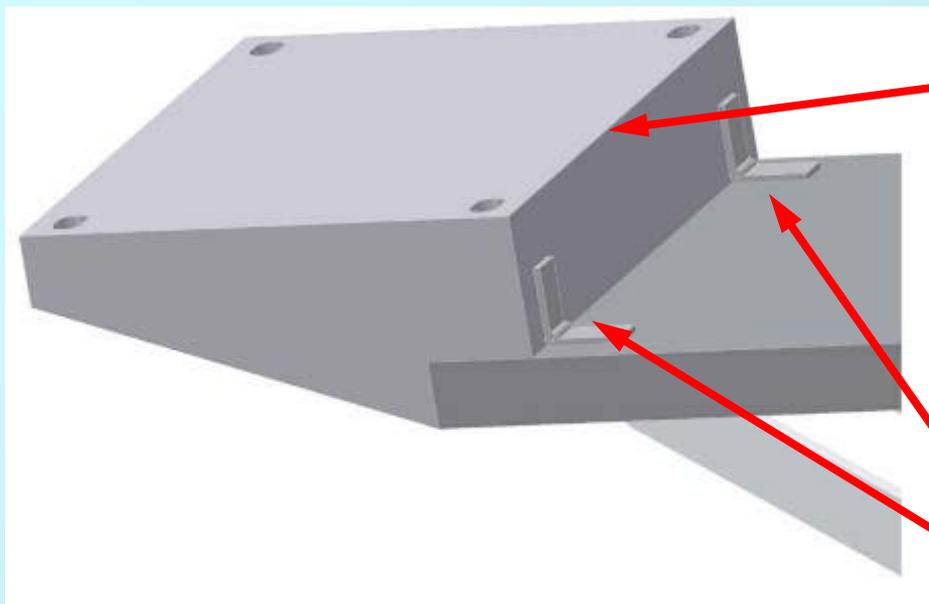
Mini Blowers

Blower Speed Controllers



# CM Lift Table

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Hinges on wing steps

# Remaining Schedule

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	Start	Complete
<b>TOF West, RXNP, MPC N</b>		
Electronics Installation/Commissioning	in progress	12/30/06
<b>HBD</b>		
HBD preamp cooling system (temporary LN2 system in-place)	10/1/06	12/30/06
Electronics Installation/Commissioning	11/1/06	12/30/06
<b>MuID commissioning</b>	1/8/07	1/15/07



# Remaining Schedule (cont'd)

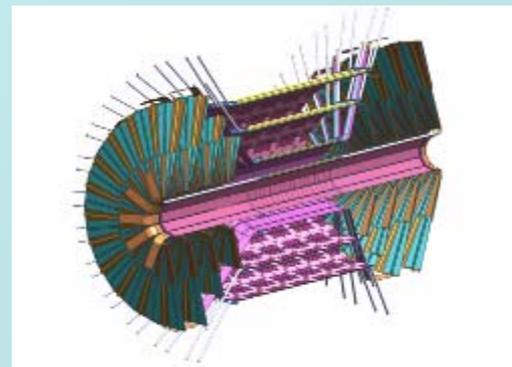
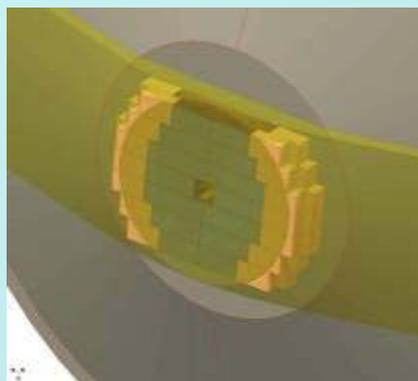
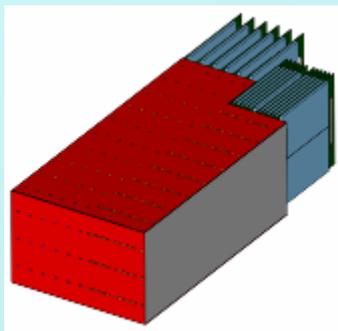
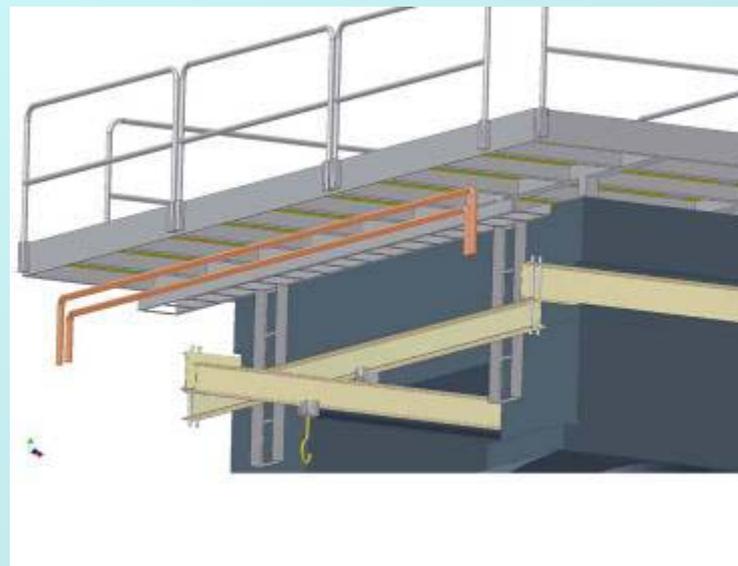
TECHNICAL SUPPORT + 2006

	Start	Complete
<b>Pink Sheeting &amp; Blue Sheeting</b>	Done	Done
<b>Move MMS full North</b>	Done	Done
<b>Rebuild Rolling door</b>	Done	Done
<b>Close rolling door</b>	Jan 8	Jan 8
<b>Start Flammable Gas Flow &amp; 2 man watch shif</b>	Jan 9	Jan 9
<b>All Up Commissioning/ Cosmic Ray Run /</b>	RS+1 D	RS+3 W
<b>Install beam pipe collar</b>	RS-1 W	RS-2 D
<b>RHIC Cooldown Begins</b>	RS	RS
<b>Beam in yellow ring</b>	RS+1 W	RS+1 W
<b>Beam in blue ring</b>	RS+2 W	RS+2 W
<b>RHIC beam conditioning</b>	RS+3 W	RS+3 W
<b>Shutdown Concluded/Start of Physics Run</b>	RS+3 W	RS+3 W



What's up for next year and beyond

- New CM Crane
- New Beam pipe design
- Muon RPC trigger design
- VTX/FVTX design
- NCC design
- MuTr upgrade
- Infrastructure improvements



# SEU Test John Lajoie Iowa State

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# PHENIX Annual Safety Review

## Follow Up: Action Items

- Inspect and approve the new access to the PHENIX bridge platform. (Etkin/ Cirnigliaro, Dec 30, 2006)
- Carry out the pink sheeting of all racks. (Haggerty / Giannotti, Nov. 16, 2006) (done)
- Carry out the Blue Sheeting (CAS, Pearson, Nov. 20, 2006)
- Add to the Blue sheeting the requirement that the new PHENIX crash button should be tested annually (Pearson Dec 30, 2006)
- Provide the new flammable gases leak rates (Pisani, Dec 30, 2006)
- Review and approve the new TOFW re-circulating gas system (Etkin Jan. 15, 2006)
- For the HSB gas transparency system check that the associated electrical systems are NRTL certified. (Giannotti, Dec 30, 2006)
- Update the PHENIX sweep procedures (Sampson, Jan. 15, 2007)
- Determine if additional crash cords are required on the new platforms (Asher Etkin and PASS, Jan 15, 2007)
- Provide J. Levesque the manufacturer's flammability rating of the PHENIX bridge cover or mat. (Lynch, Dec. 15, 2006) (done and approved)
- Review the proposed HBD electronics cooling. (Pearson / Makdisi, Dec. 30, 2006)
- Review the SEU (single event upset) test. (Makdisi Dec 30, 2006)

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# PHENIX Annual Safety Review Follow Up: Action Items

## General:

- Update the PHENIX ECR. (Essendelft, Dec. 30, 2006) (done)
- Carry out a magnetic safety review and measure the magnetic field on the bridge platform (Cirnigliaro / Pearson, Dec. 30, 2006) (done)
- Update the PHENIX emergency procedure. (Franz / Makdisi, Dec. 30, 2006)
- A walk through of the PHENIX detector prior to introduction of flammable gas. (Makdisi, Dec. 30, 2006)
- Update the documented work procedures. (O'Brien / Lynch, Feb 1, 2007)
- Establish trained PHENIX watch shifts. (O'Brien, Feb 1, 2007)

# HBD Transparency Monitor

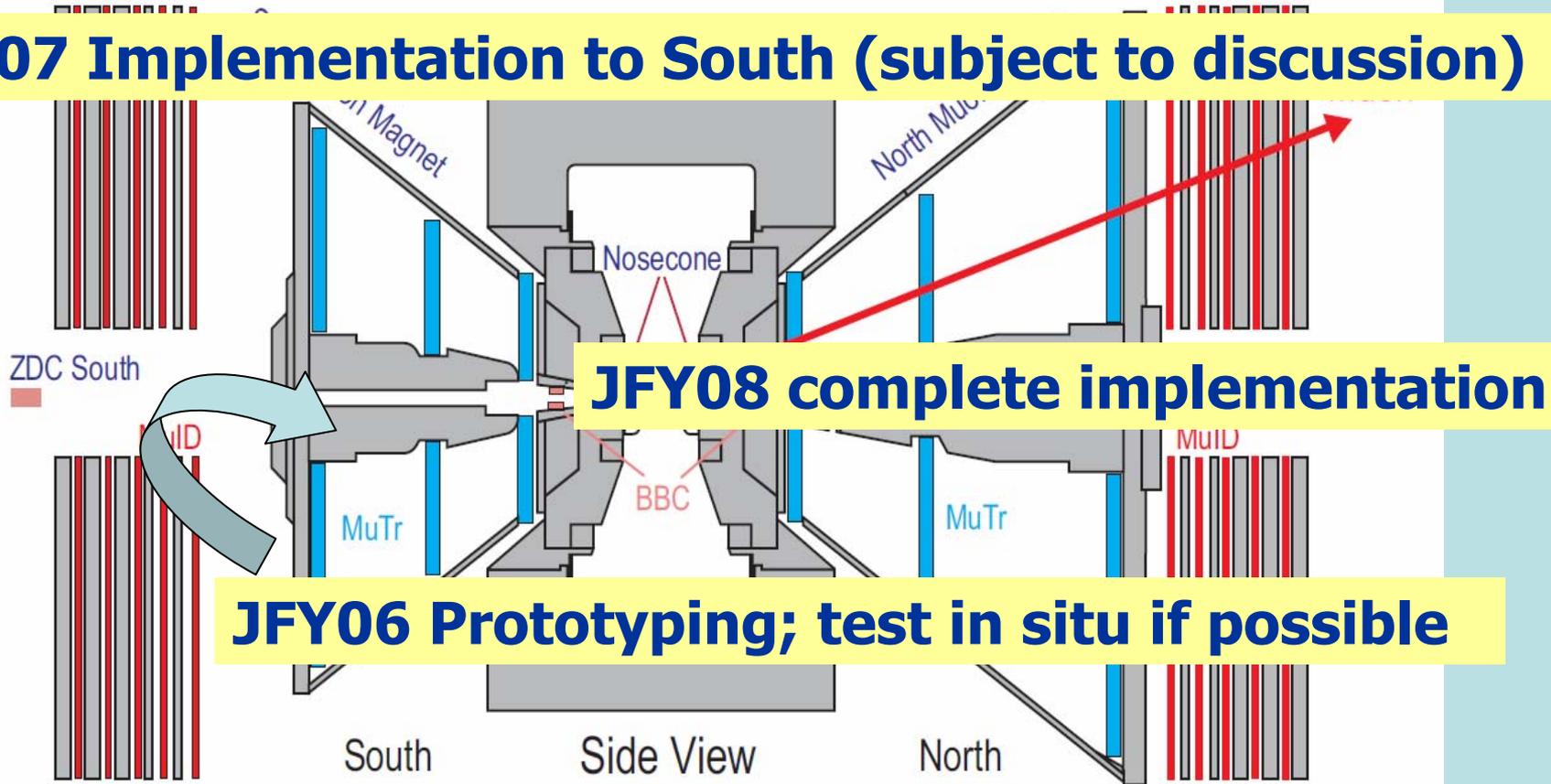
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# MuTr Upgrade Overview of Approved Funding

- ~\$2M over 5 years JFY 06-10
- JFY 06 ~ 08 : Implementation of New Splitting/Preamp/Discriminator board
- JFY 09 : Expect Full Production
- JFY 10 : Results

**JFY07 Implementation to South (subject to discussion)**



**JFY08 complete implementation**

**JFY06 Prototyping; test in situ if possible**

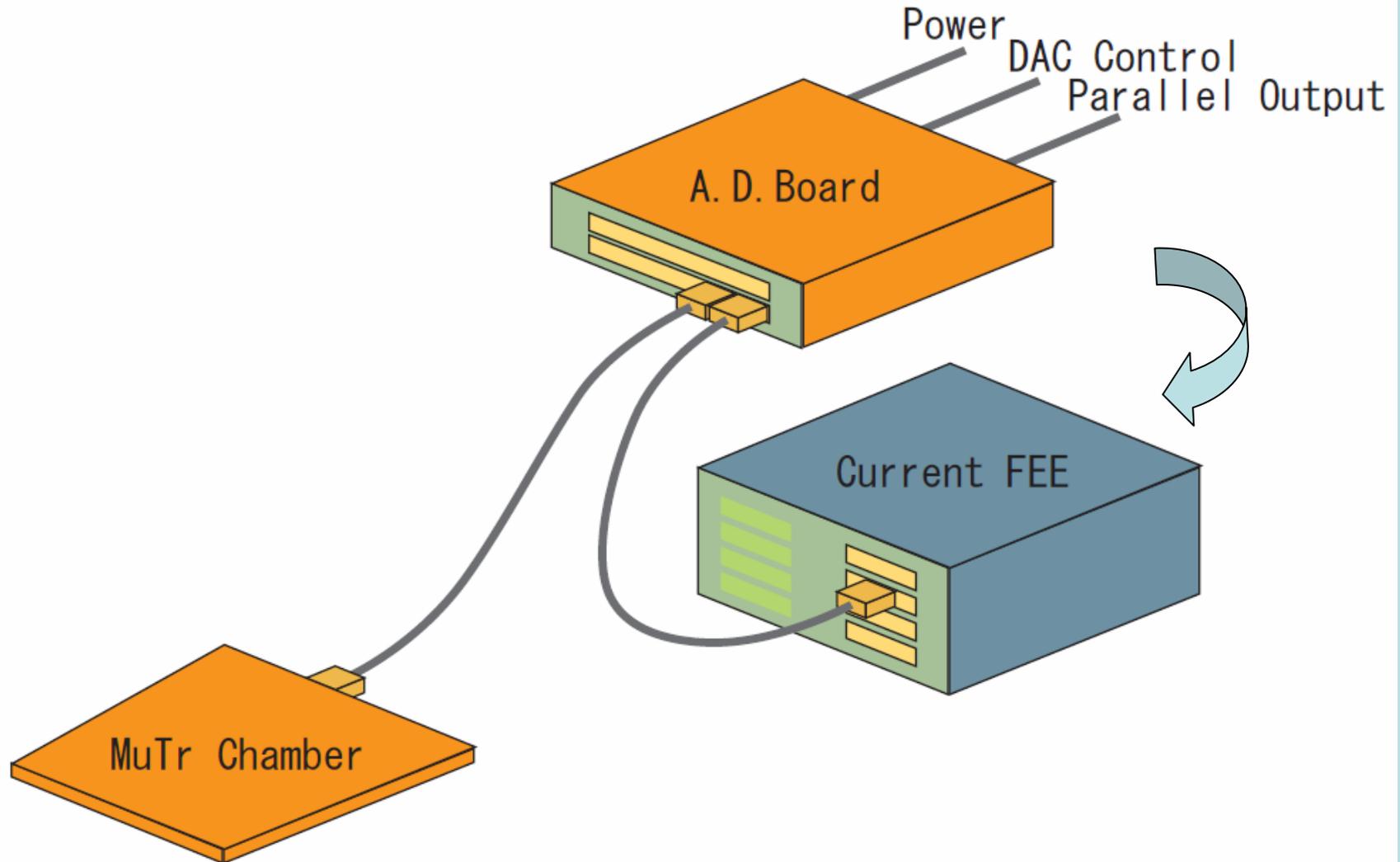
## MuTr Current thinking...

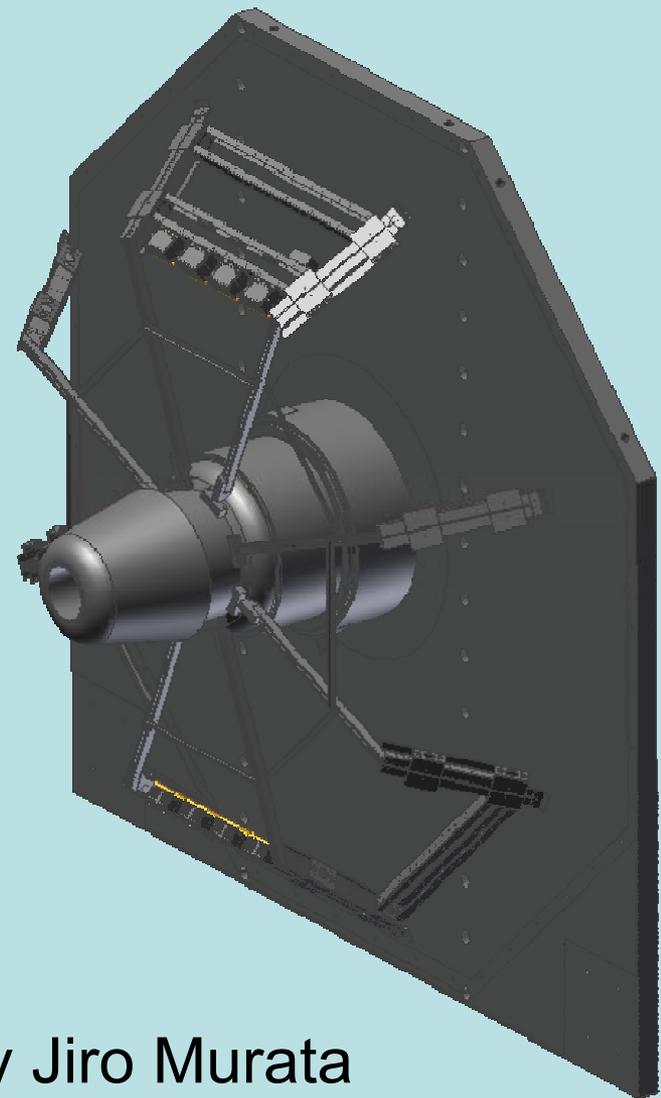
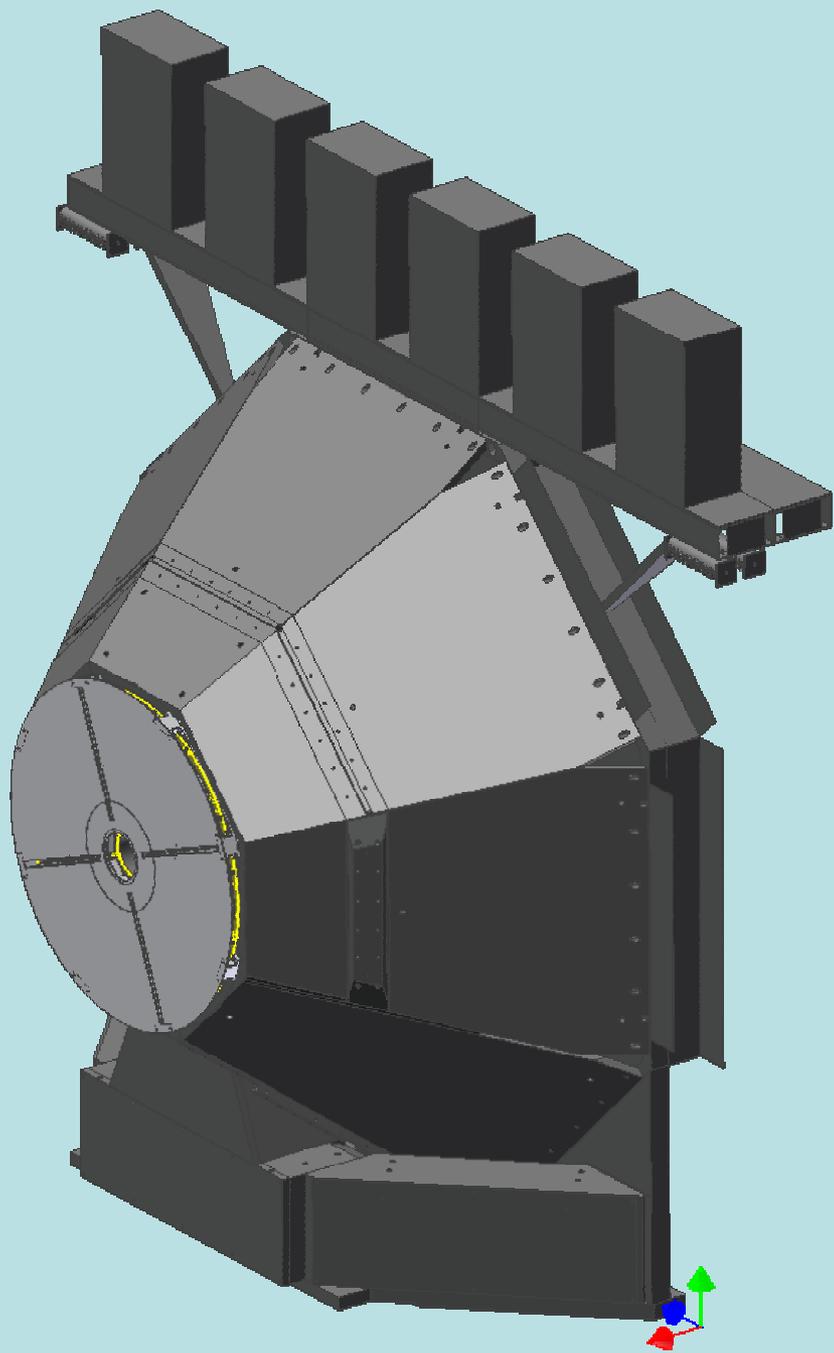
- "Complete" one set (before LL1) by the end of this JFY (March, 31, 2007)
- Fabricate a few more, and test in North Arm during Run-7 (assuming some break around May?)
- Design Review in October
  - Evaluate readiness for "mass fabrication"
- In parallel, we need LL1 development (to be combined with RPC information)
- Installation plan should be developed
  - When is the best time to have a looong shutdown, summer 2008? 2009?

# Inside Muon Magnet

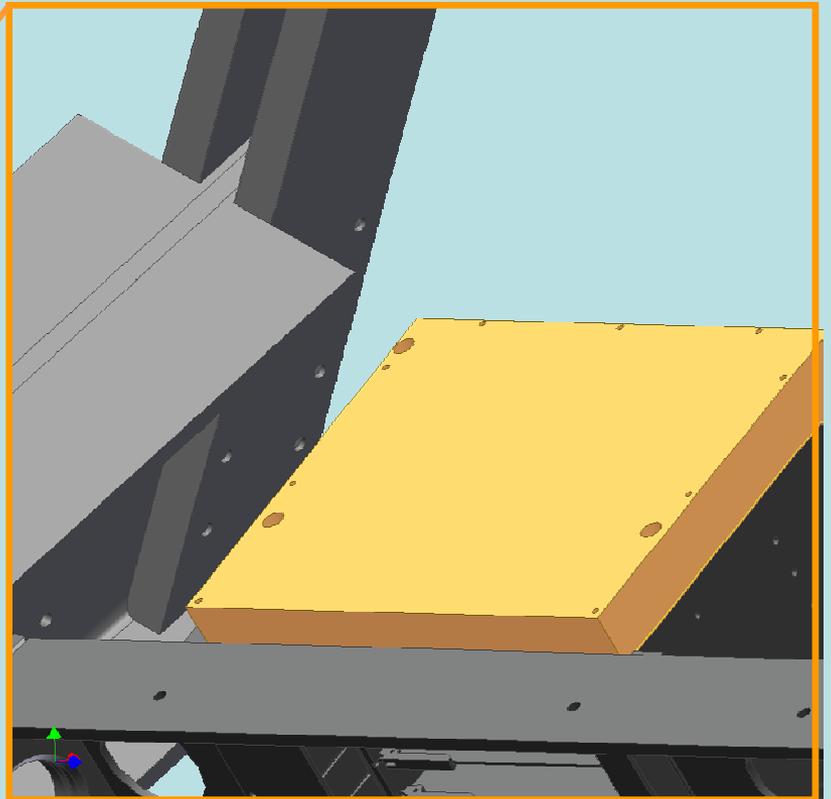
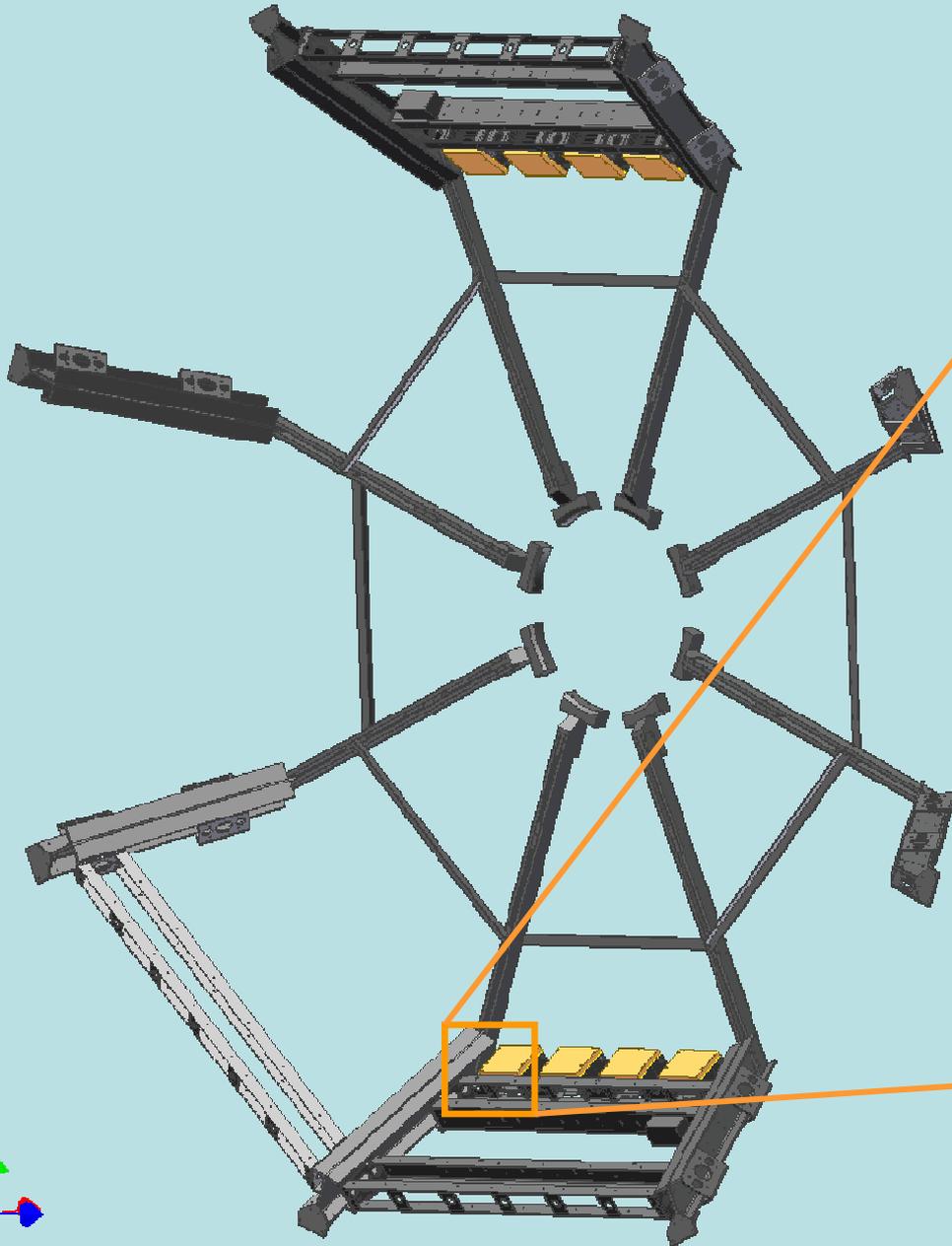


# A D Board Installation





By Jiro Murata

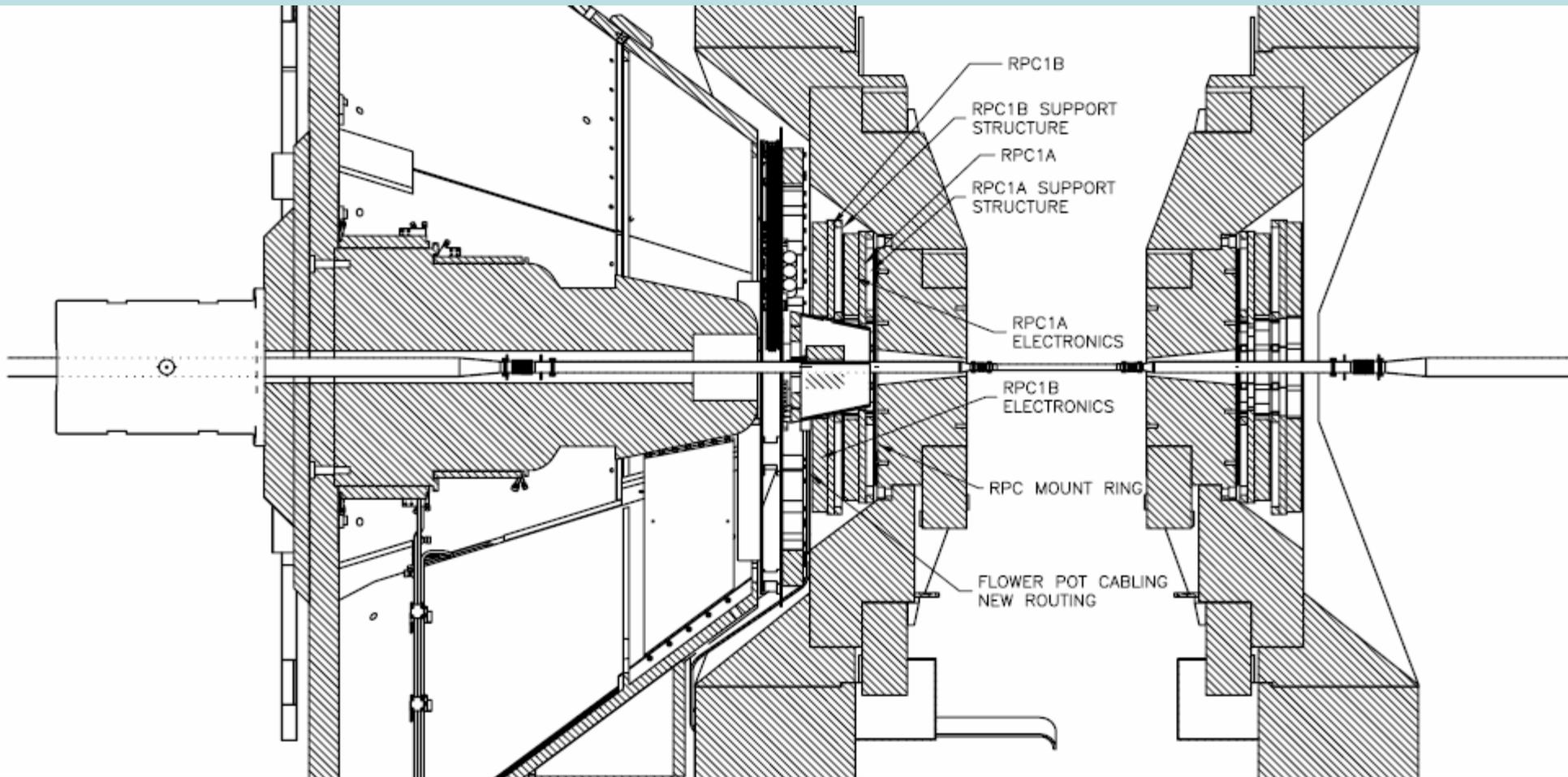


By Jiro Murata

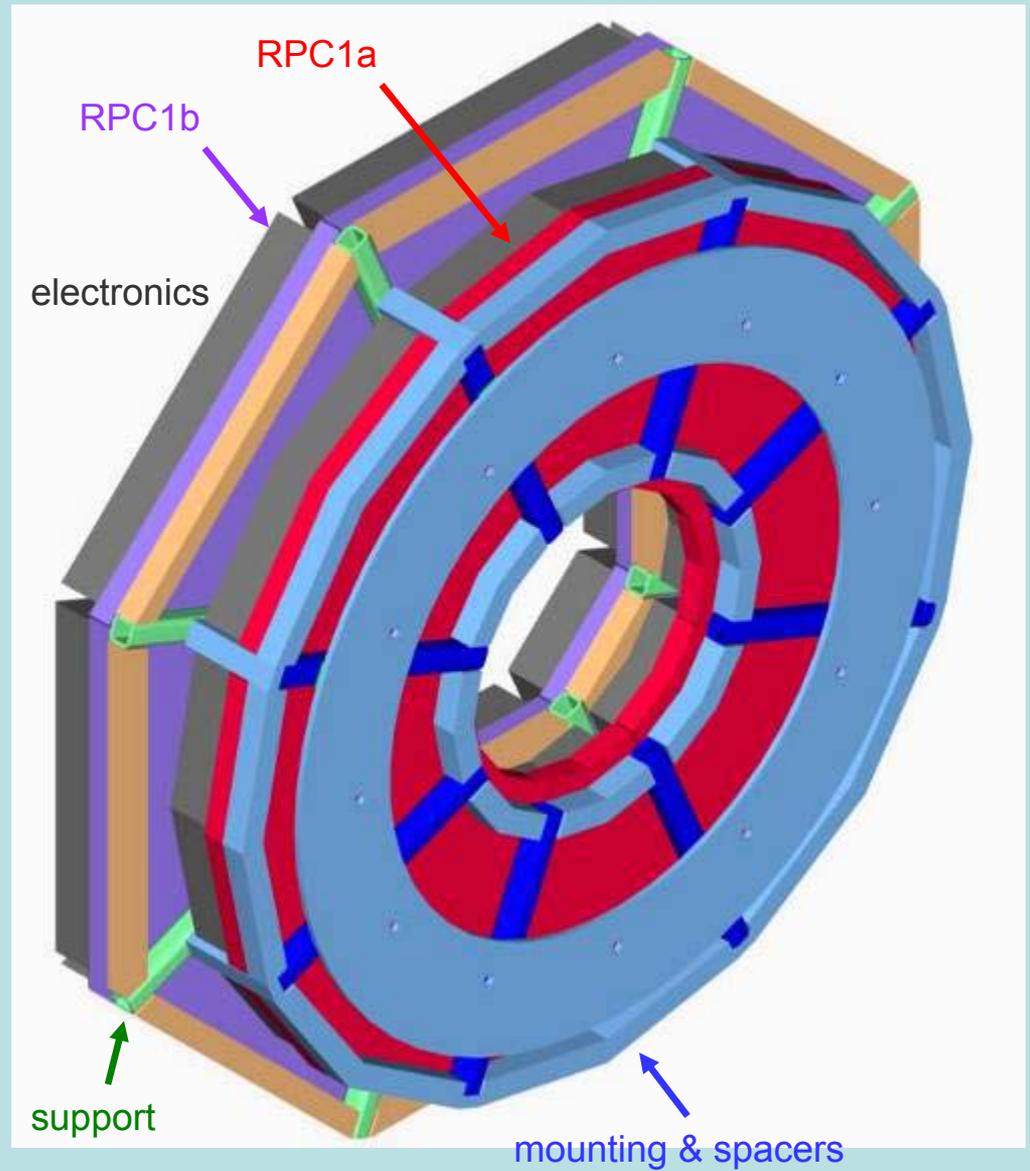
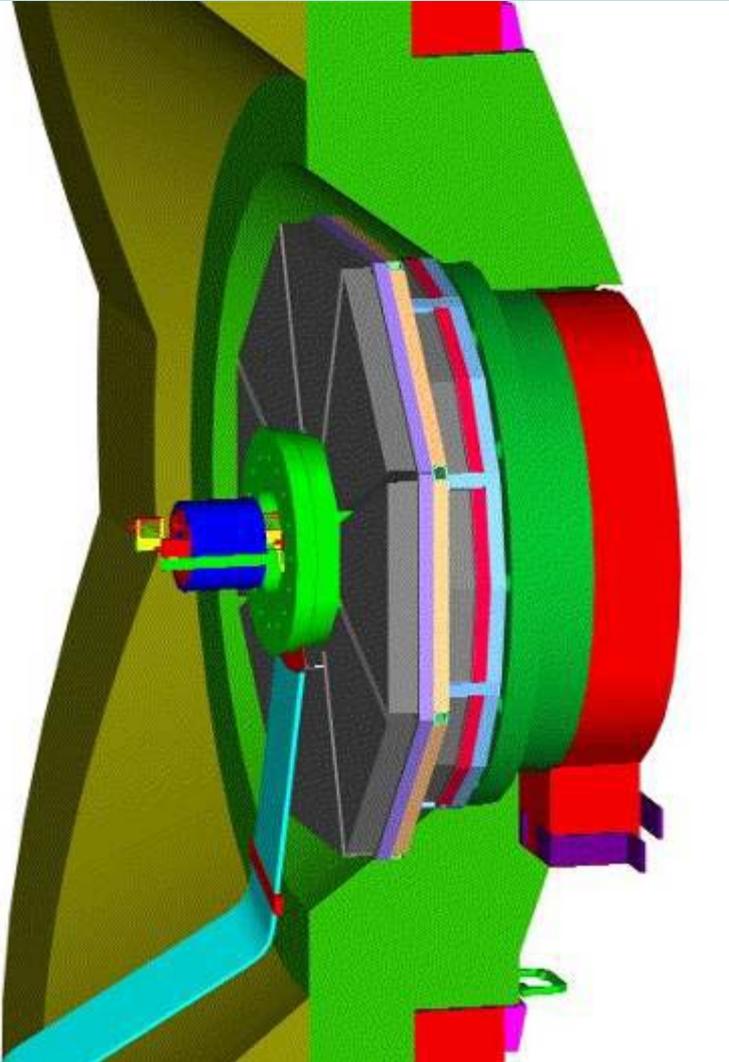
# Mu RPC Conceptual

- three RPC stations in each arm (south & north)
  - RPC1: between central magnet and muon tracker
  - RPC2: between muon tracker and muon ID
  - RPC3: behind muon ID
- azimuthal angle segmentation
  - 360 divisions
  - minimum strip width 12 mm
  - project RPC1b into all other stations
- polar angle segmentation
  - 8 divisions (where possible)
  - 4 divisions for RPC1, 6 divisions for RPC3
- optimize (overlap)
  - azimuthal angle in RPC1
  - polar angle in RPC2 and RPC3

# RPC1 Section View

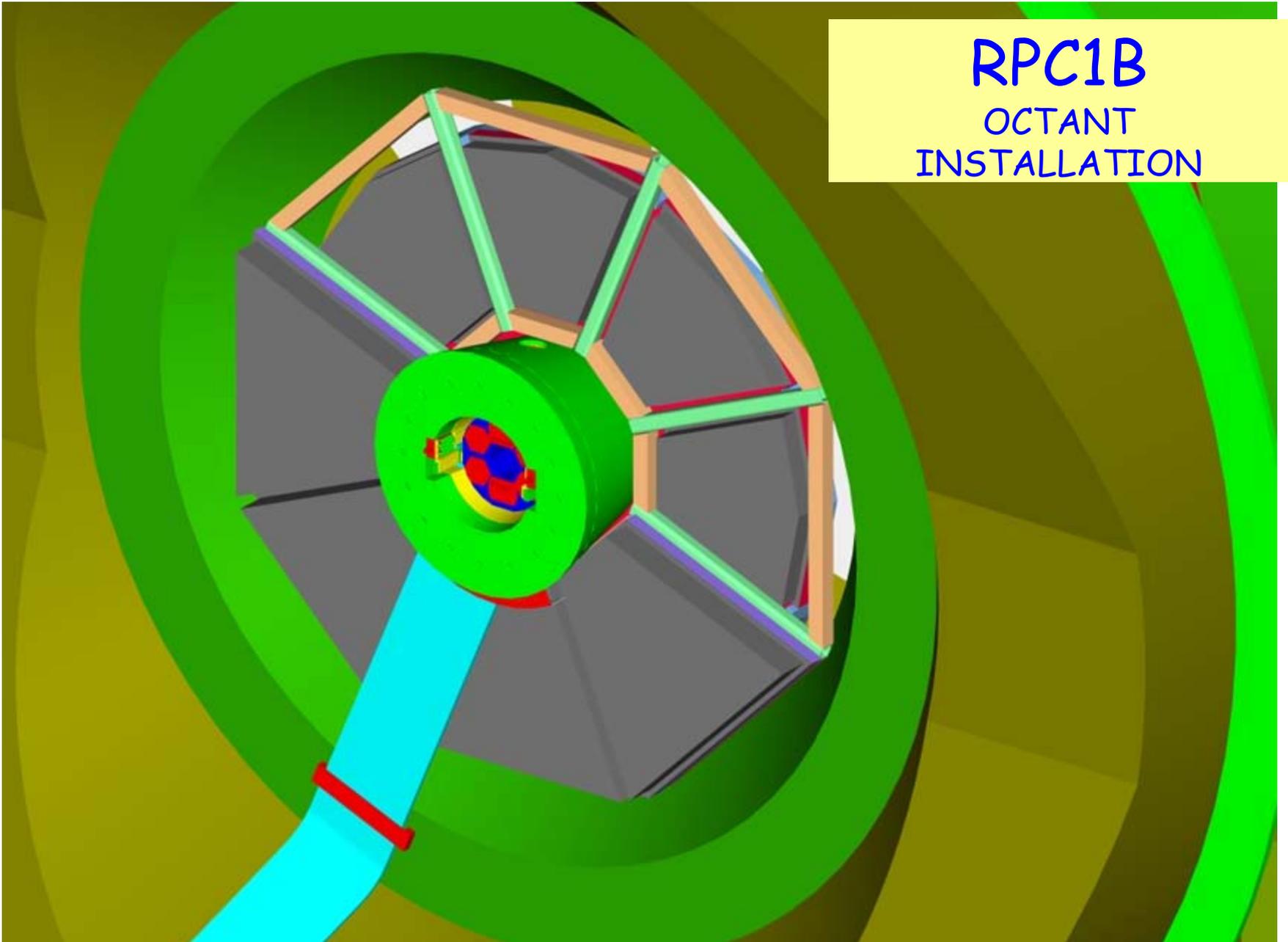


# RPC1a&b (partly obsolete)





# RPC1B OCTANT INSTALLATION

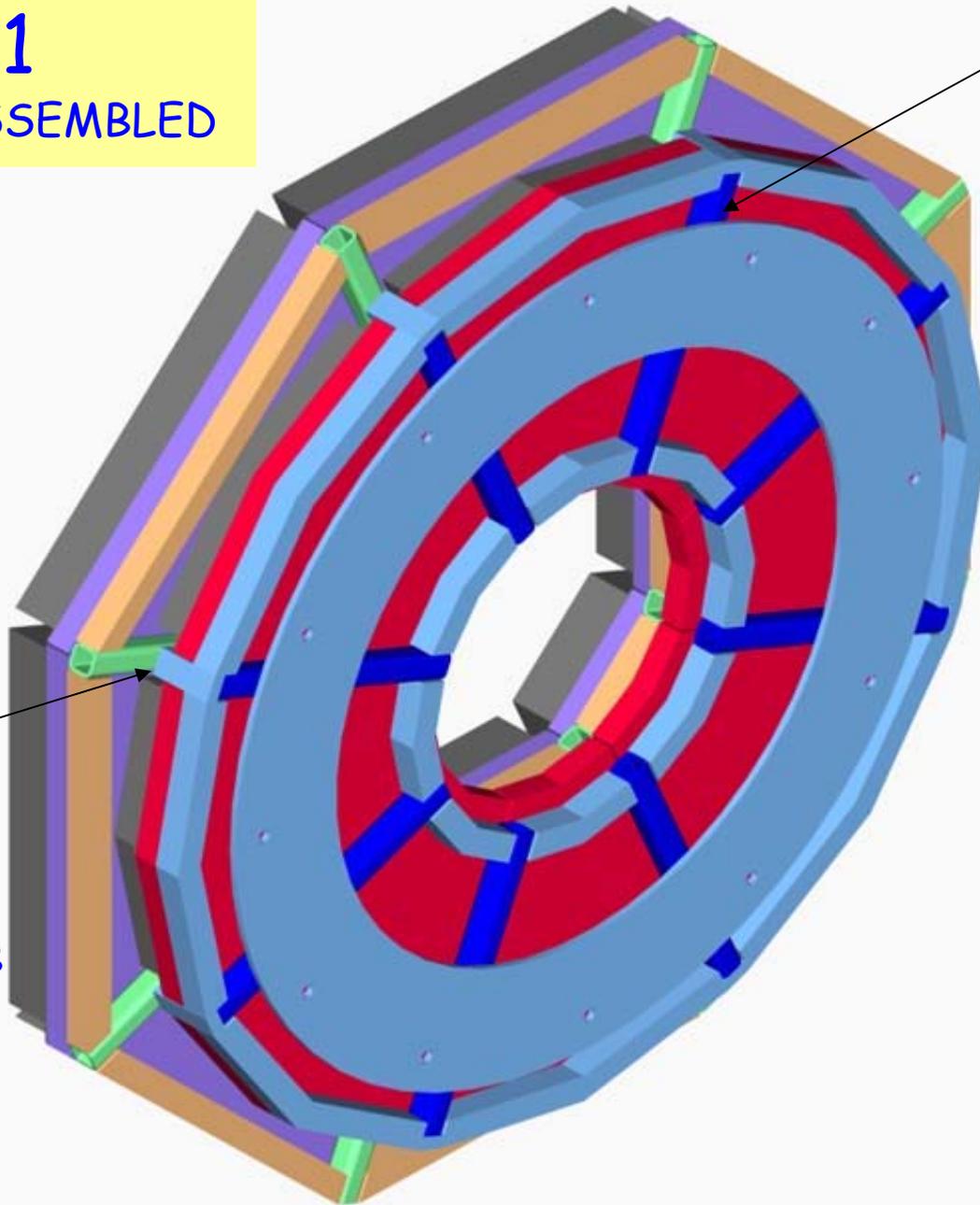


# RPC1

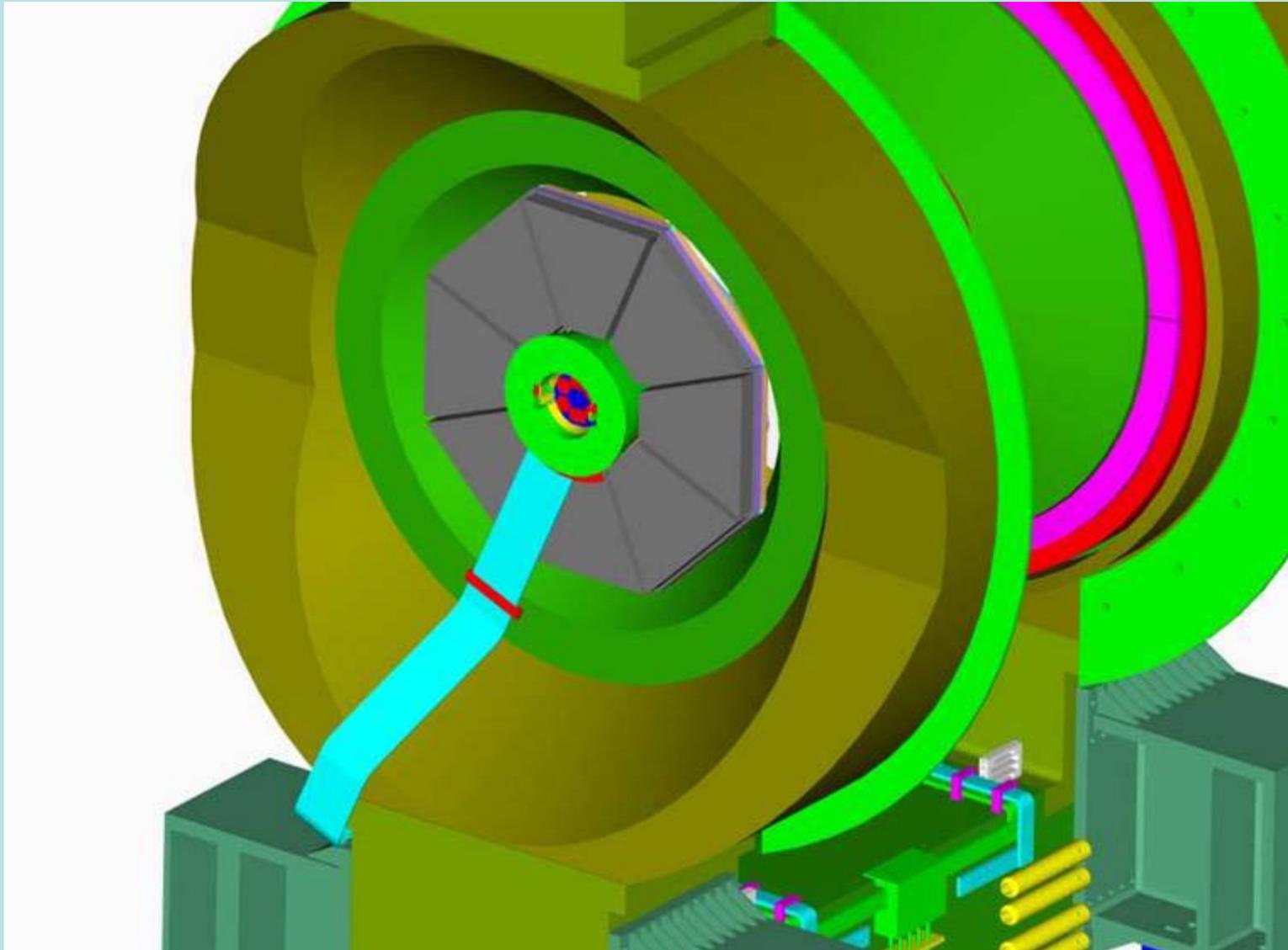
UPSTREAM ASSEMBLED

$\frac{1}{2}$ " SPACERS  
HAVE  
BEEN  
REMOVED

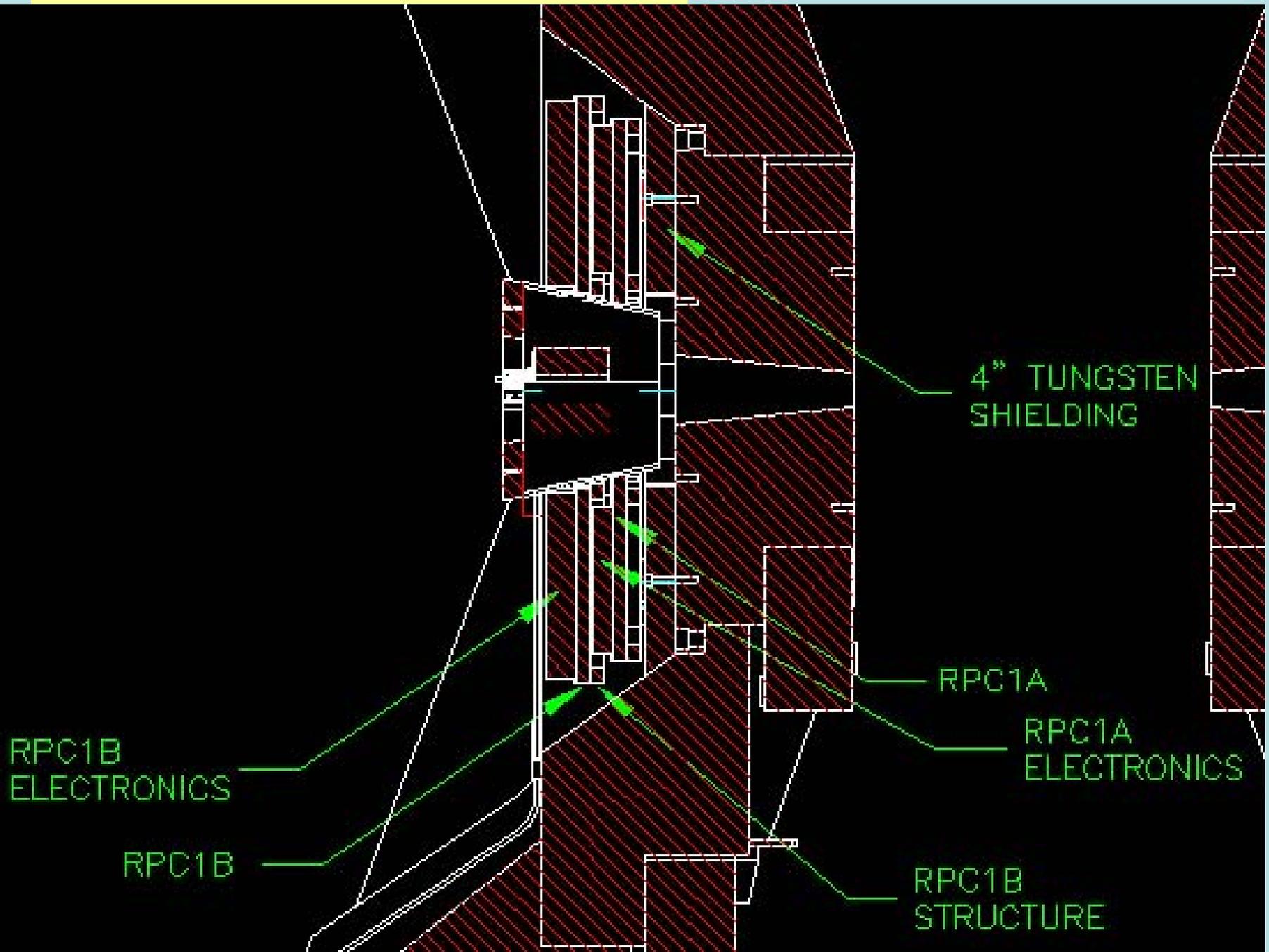
RPC1A  
ELECTRONICS  
BOXES ARE  
NESTED IN  
BETWEEN RPC1B  
STRUCTURE



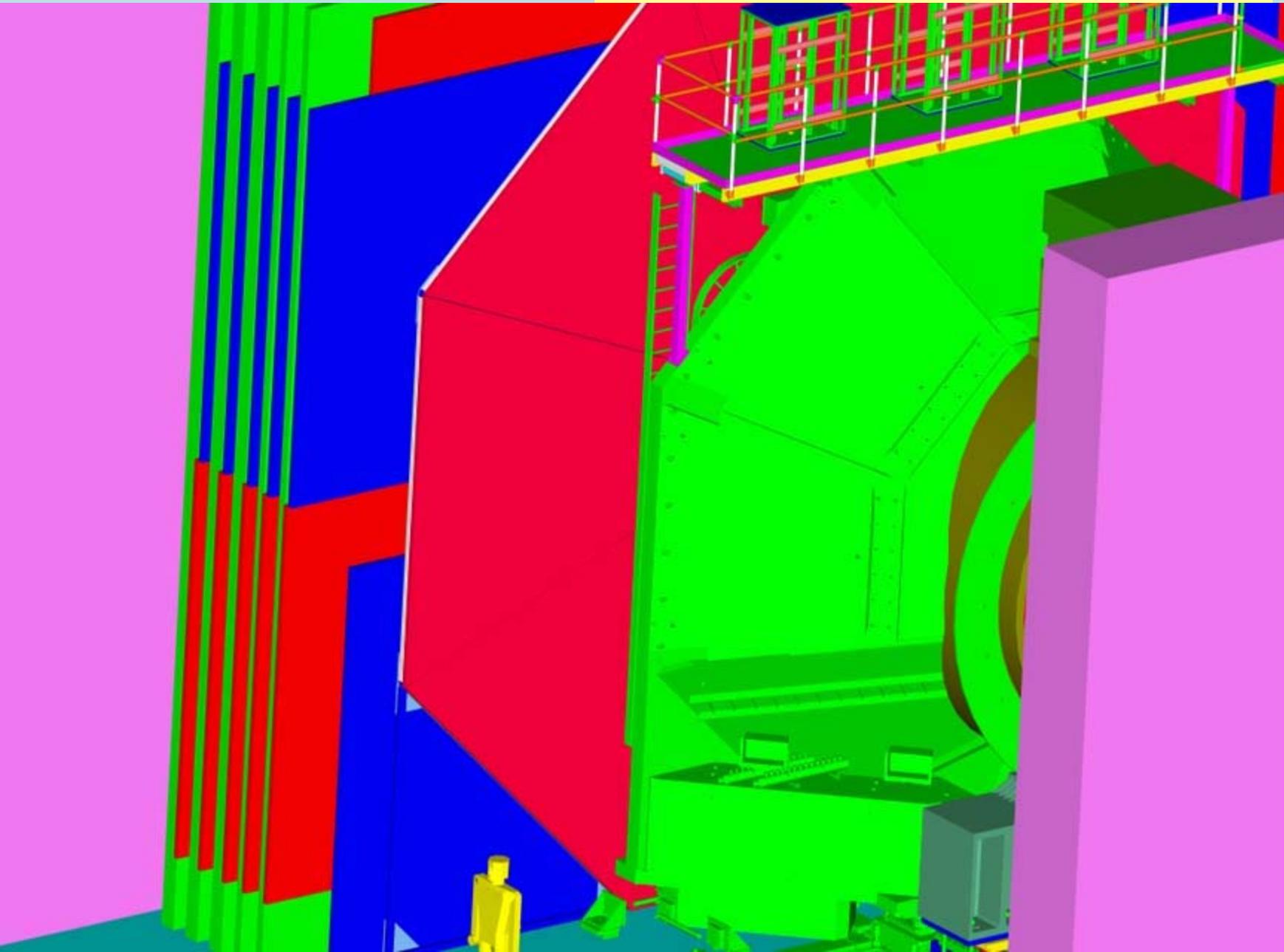
# SOUTH RPC1 INSTALLED



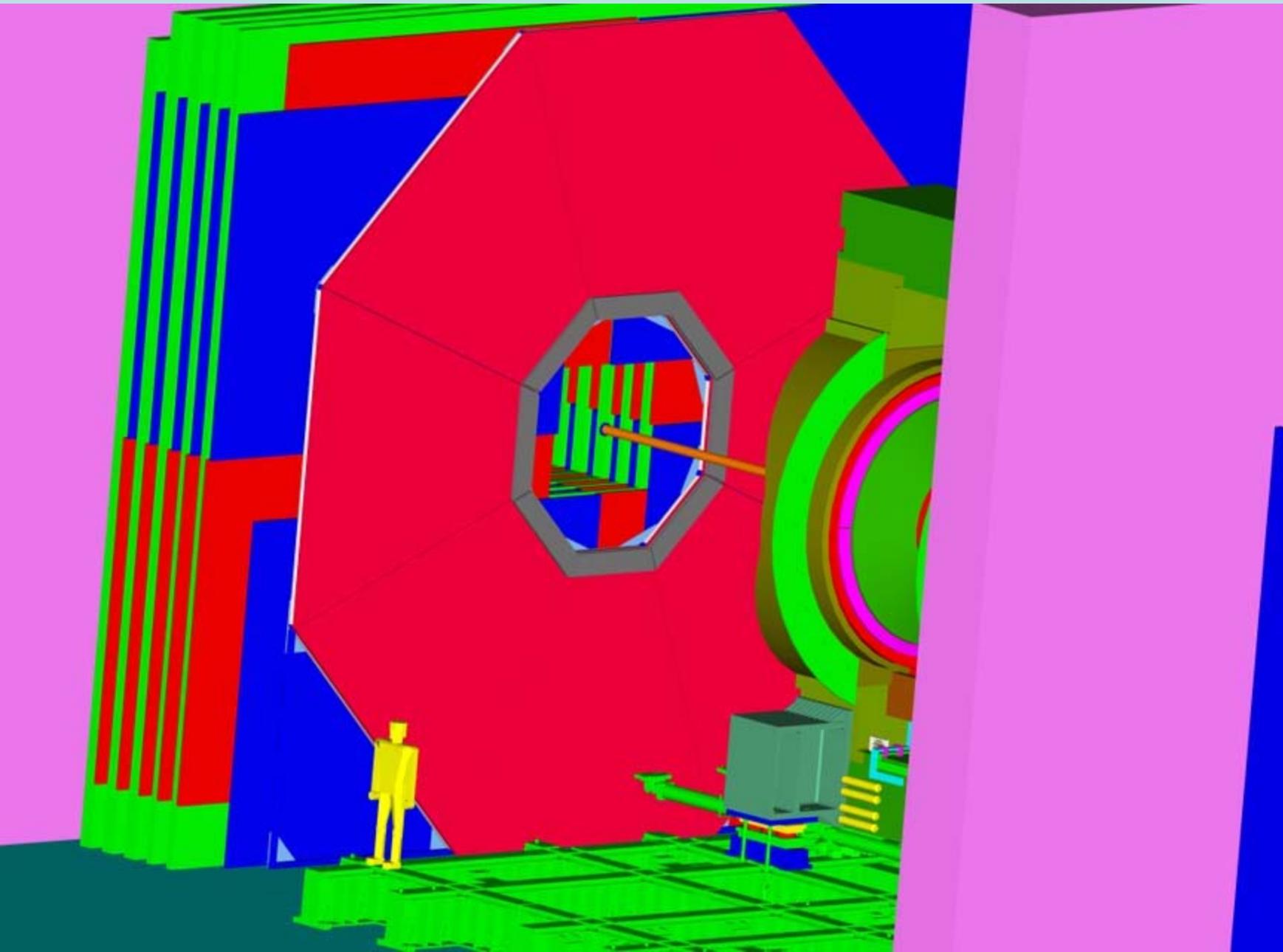
# SOUTH RPC1 - SECTION



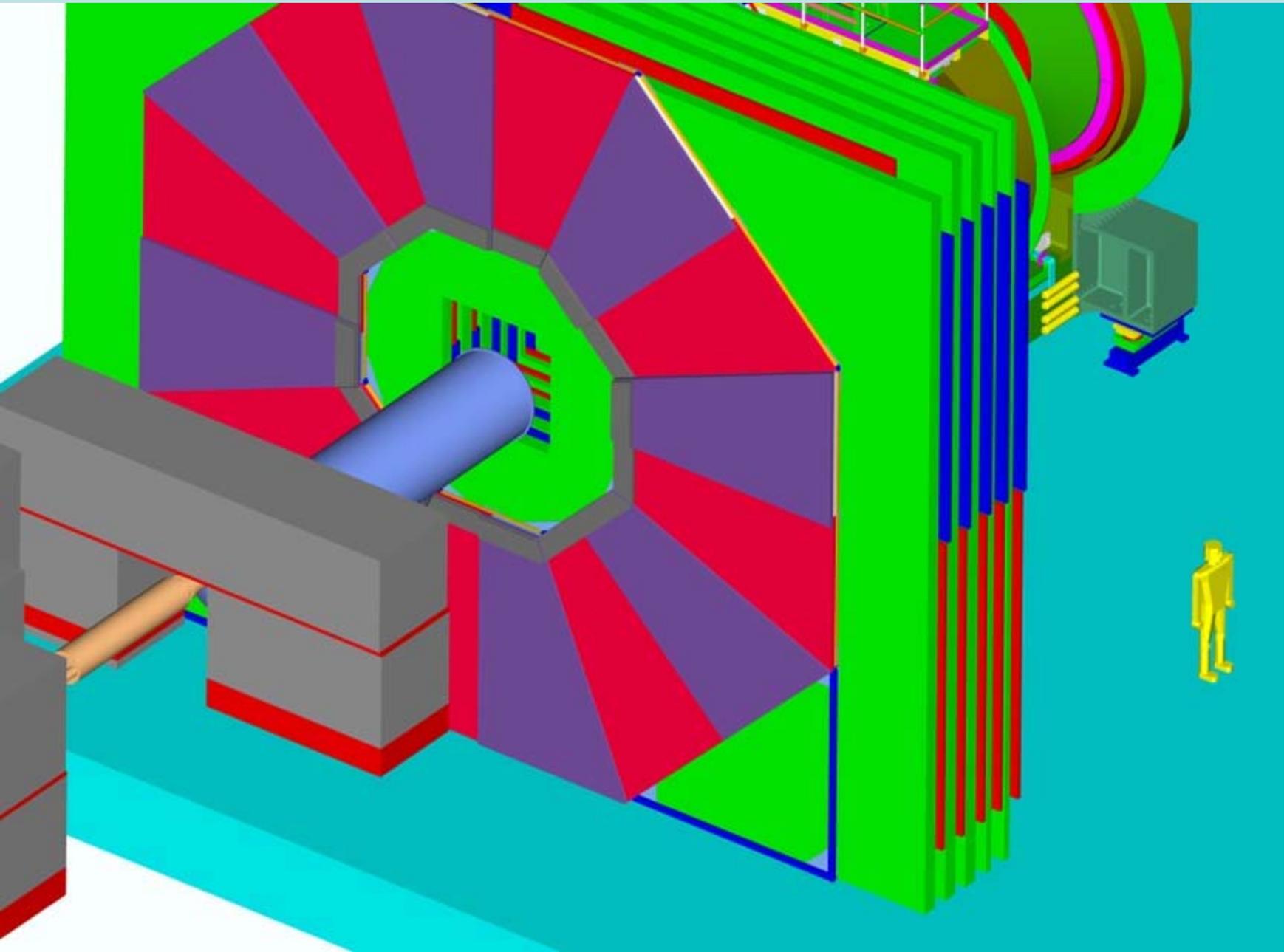
# SOUTH RPC2 - WITH SOUTH muTR



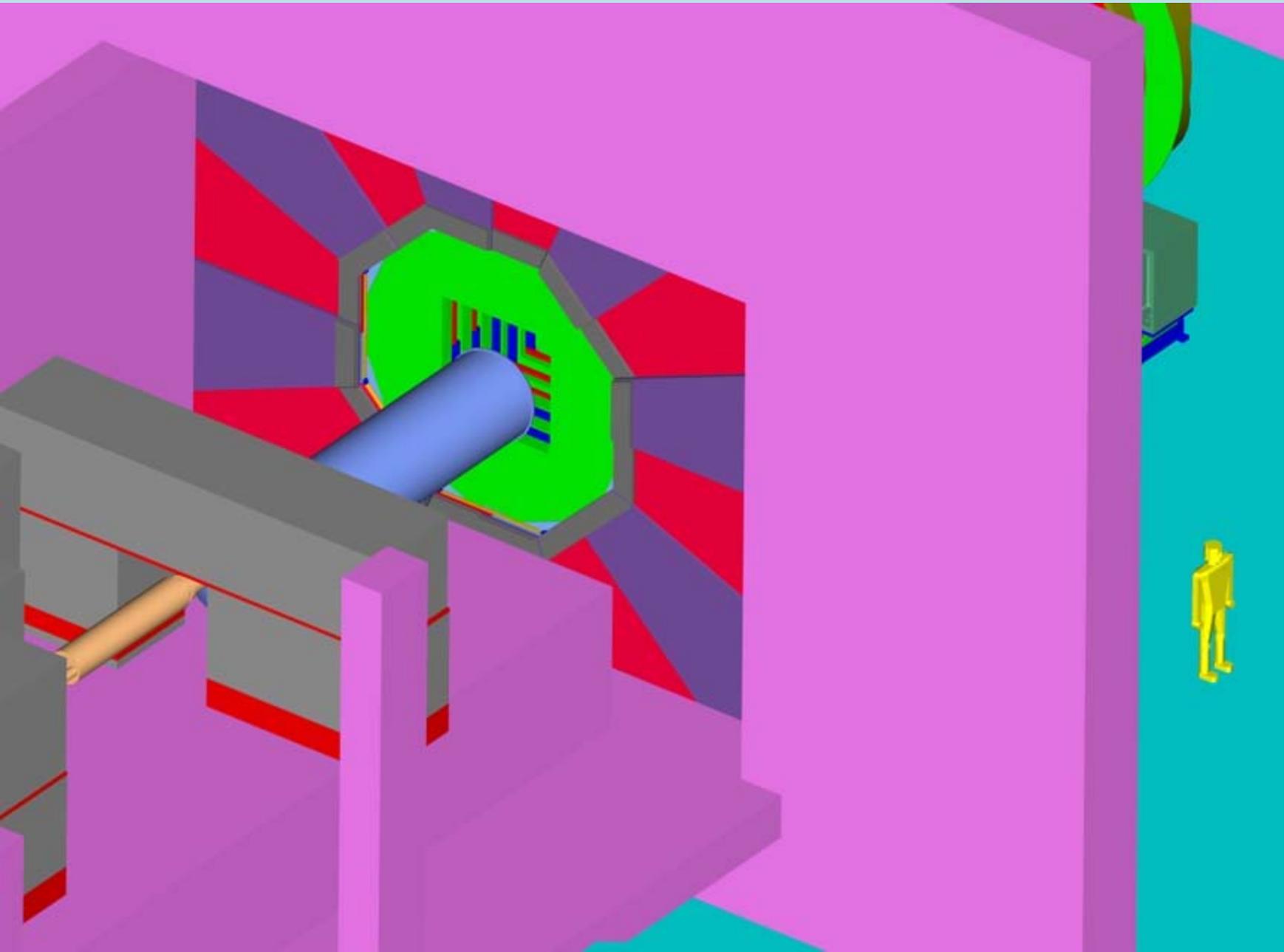
# SOUTH RPC2 - WITHOUT SOUTH muTR



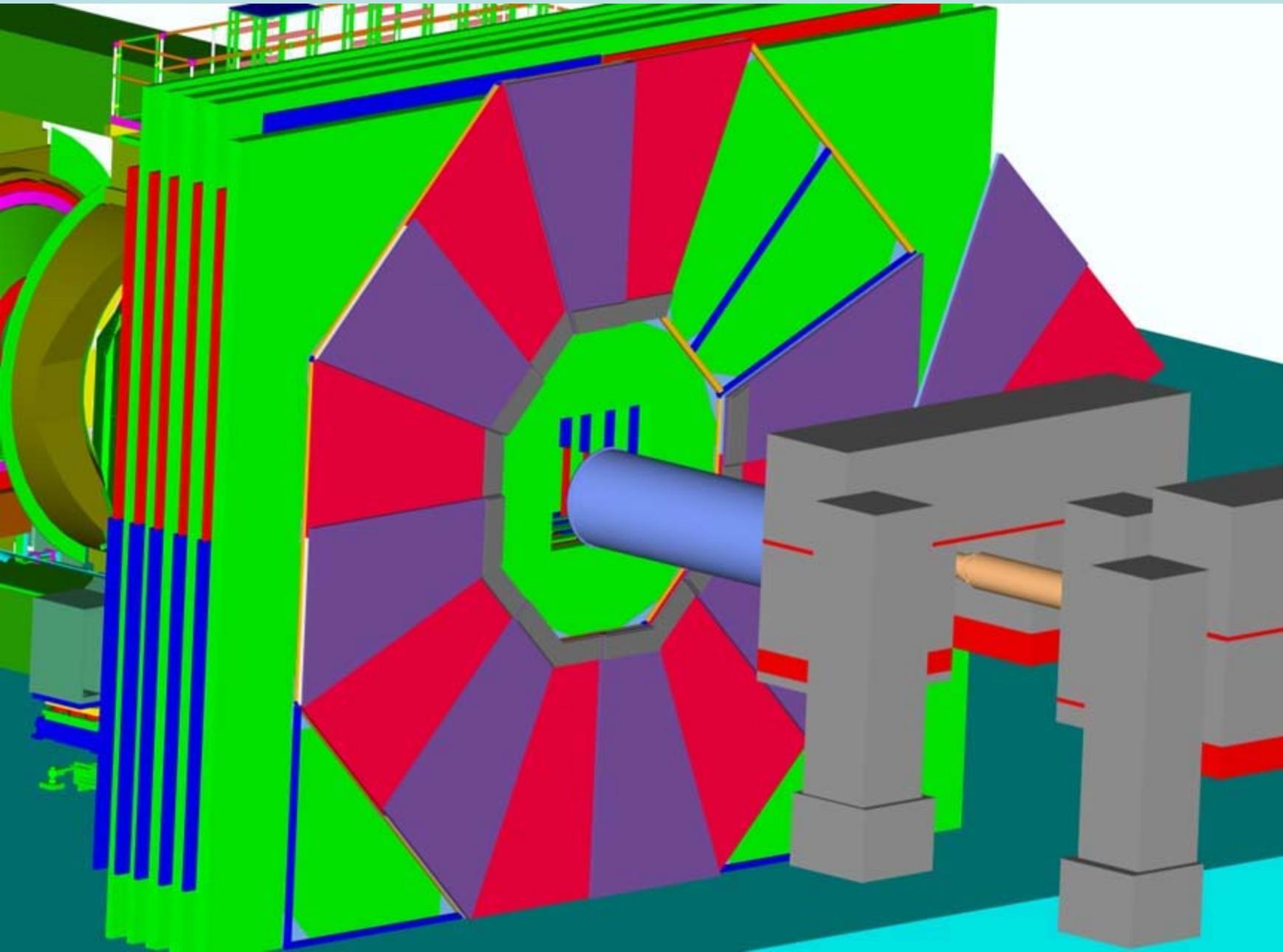
# SOUTH RPC3 - WALL TURNED OFF



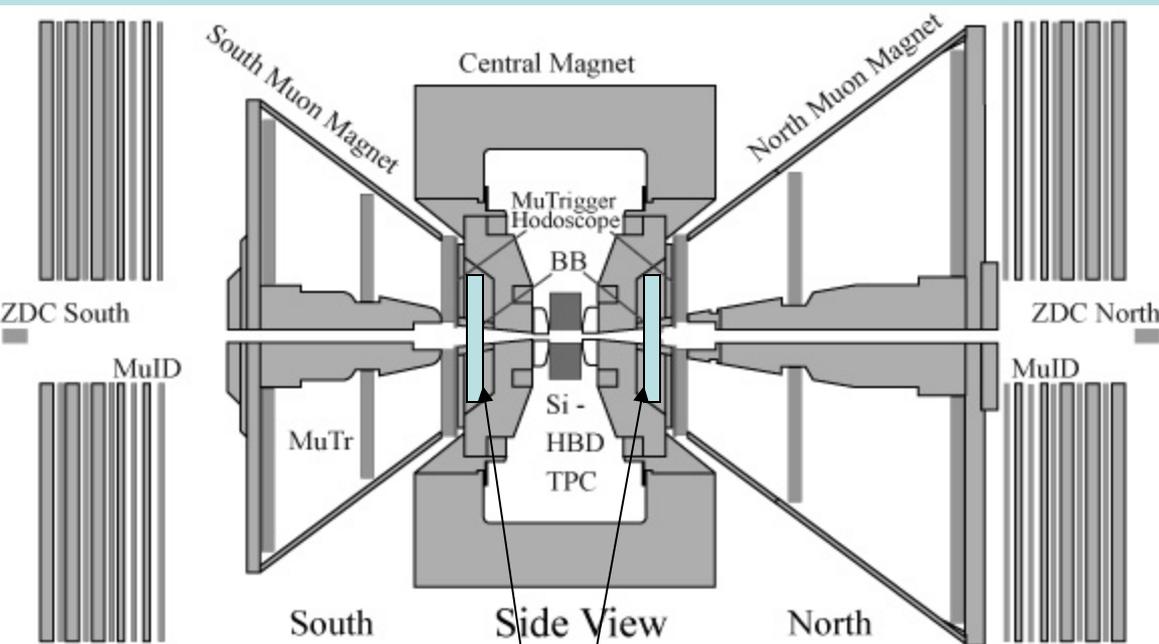
# SOUTH RPC3 - WALL TURNED ON



# SOUTH RPC3 - OCTANT REMOVED



# Tungsten and fake high $P_T$ hadrons



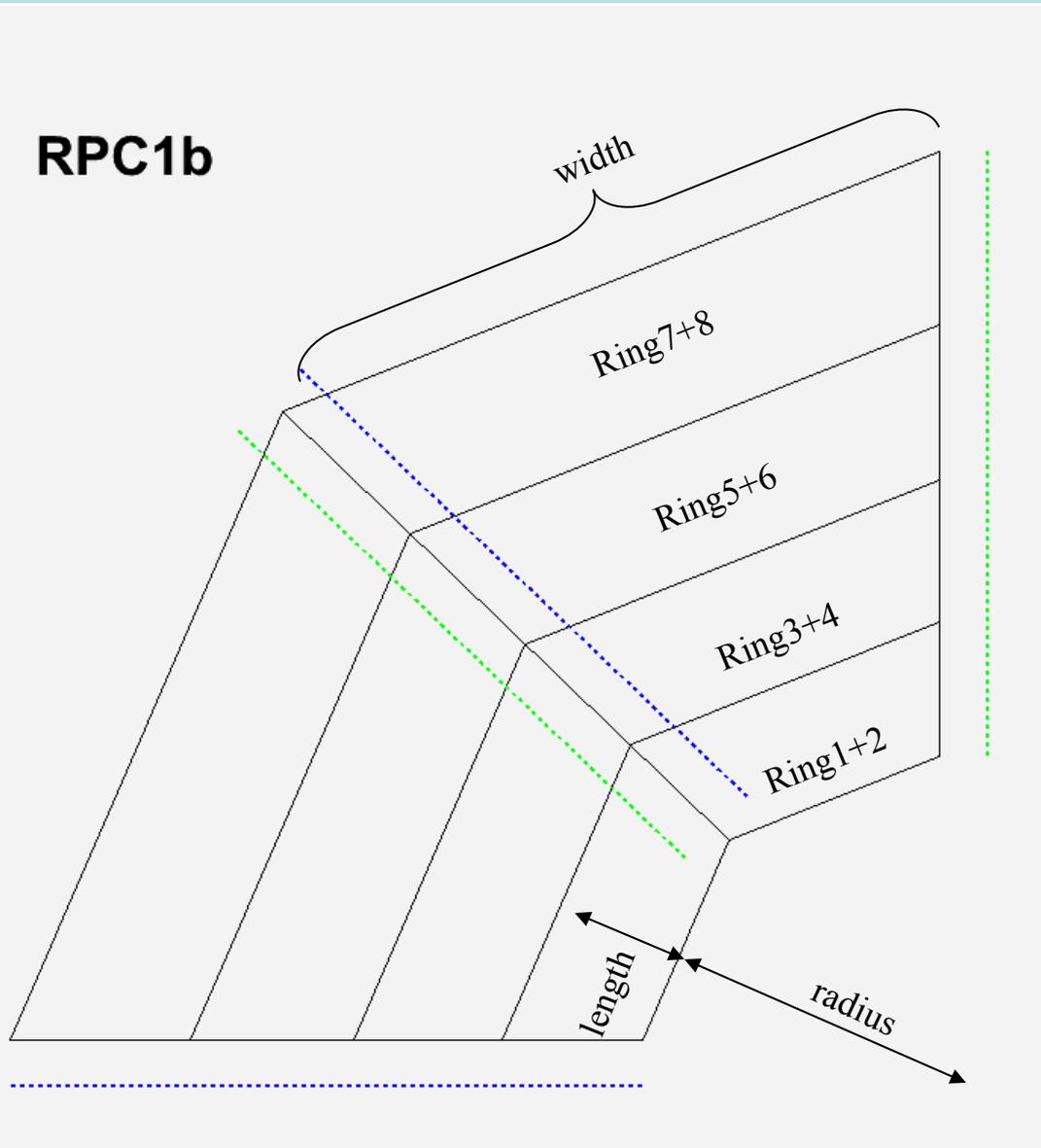
Additional absorber

- Maybe Tungsten for Nosecone Calorimeter (NCC) in place for muTrigger upgrade
  - Additional Space before RPC1 could also be filled with  $\sim 10\text{cm}$  Tungsten
  - Probably too expensive, how about iron
  - How about magnetized Iron ring or coil?
- ➔ PISA studies with different materials started to test effect on fake high  $P_T$  hadrons (thanks to initial help by Andy and Oleg)

# TUNGSTEN INSTALLATION



- $\phi$  acceptance most important  $\rightarrow$  overlap octants by 6cm each  $\rightarrow$  height: 56 mm
- Instead of 8 rings 4 rings  $\rightarrow$  two split gaps between ring1+2/ring 3+4 and ring 5+6/ring 7+8



		<b>RPC1b</b>	
	theta (deg)	radius	width
<b>possible</b>			
	34.45	1068.6	885.3
<b>ring 8</b>		strips: 208.5 x 12.0 (74)	
	31.69		
<b>ring 7</b>			
	28.92	860.9	713.2
<b>ring 6</b>		strips: 186.6 x 12.0 (60)	
	26.16		
<b>ring 5</b>			
	23.40	674.2	558.6
<b>ring 4</b>		strips: 171.7 x 12.0 (47)	
	20.64		
<b>ring 3</b>			
	17.88	502.6	416.3
<b>ring2</b>		strips: 161.3 x 12.0 (35)	
	15.12		
<b>ring1</b>			
	12.36	341.3	282.7
<b>possible</b>			
		split gaps: ring 2 and 3 + ring 6 and 7	

# Infrastructure Work

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CAD/RHIC PHENIX infrastructure related mechanical and electrical support

Roof leak repairs

Door Latch maintenance for security

Run 7 prep support

?

*Requested*

*On-going*





# Trailer repairs



# Trailer Work Areas



# Next Week

- Deck the Halls (Monday Holiday)
- HBD, TOF W, RXNP, MPC N electronics commissioning
- HBD (BD)<sup>2</sup> [=H(BD)<sup>3</sup>?] fabrication/test/installation
- PHENIX Procedure review continued
- Prepare for run 6.9 → 7
- Interlocks for CM Lift table [Up is done, Down is in progress]

# New Business



Get your requests in early  
for shutdown 2007 work

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# Where To Find PHENIX Technical Info

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## Happy Festivus!

To celebrate the holiday season, a charitable donation  
in your name has been made to:

*The Human Fund*

Money for People.

Links for the weekly planning meeting slides, long term planning, pictures, videos and other technical info can be found on the web site:

[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_SSint-page.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm)