

# E08-027

## g2p & the LT Spin Polarizability

K. Slifer, UNH

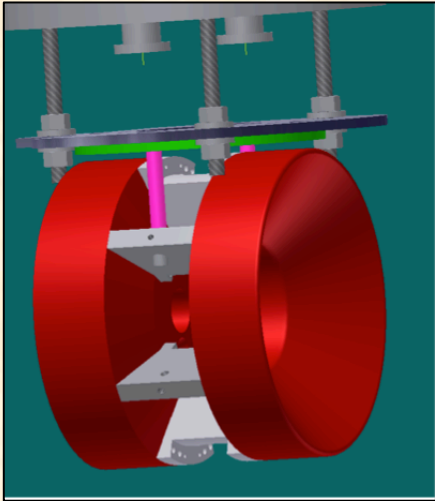


for the E08-027 Collaboration

Dec 15, 2011

# Polarized Target Status

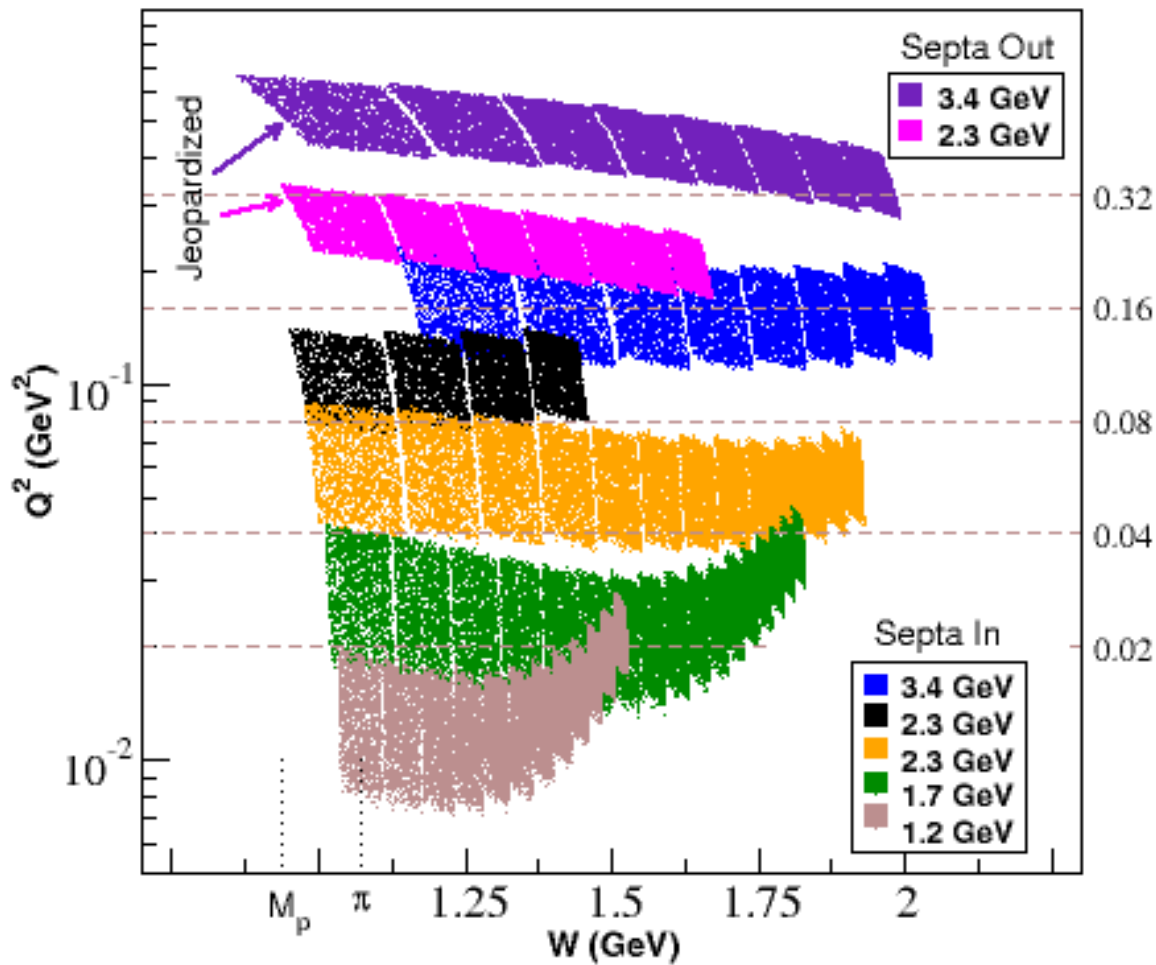
*info courtesy C. Keith*



## Hall B Poltarg Magnet

- The Hall B magnet has been removed from the Hall B cryostat.
- All modifications to the magnet have been made
- All components for hanging it from the Hall C/A dewar are in house and have been assembled.
- With the assistance of the Survey & Alignment group, we should have it in place by Friday afternoon.
- A hose to connect the magnet to the polarized target's LHe dewar will then be fabricated and installed. The magnet leads will be attached at that time also.
- **We are still on track to begin installation in Jan.**

# Previously Planned Coverage



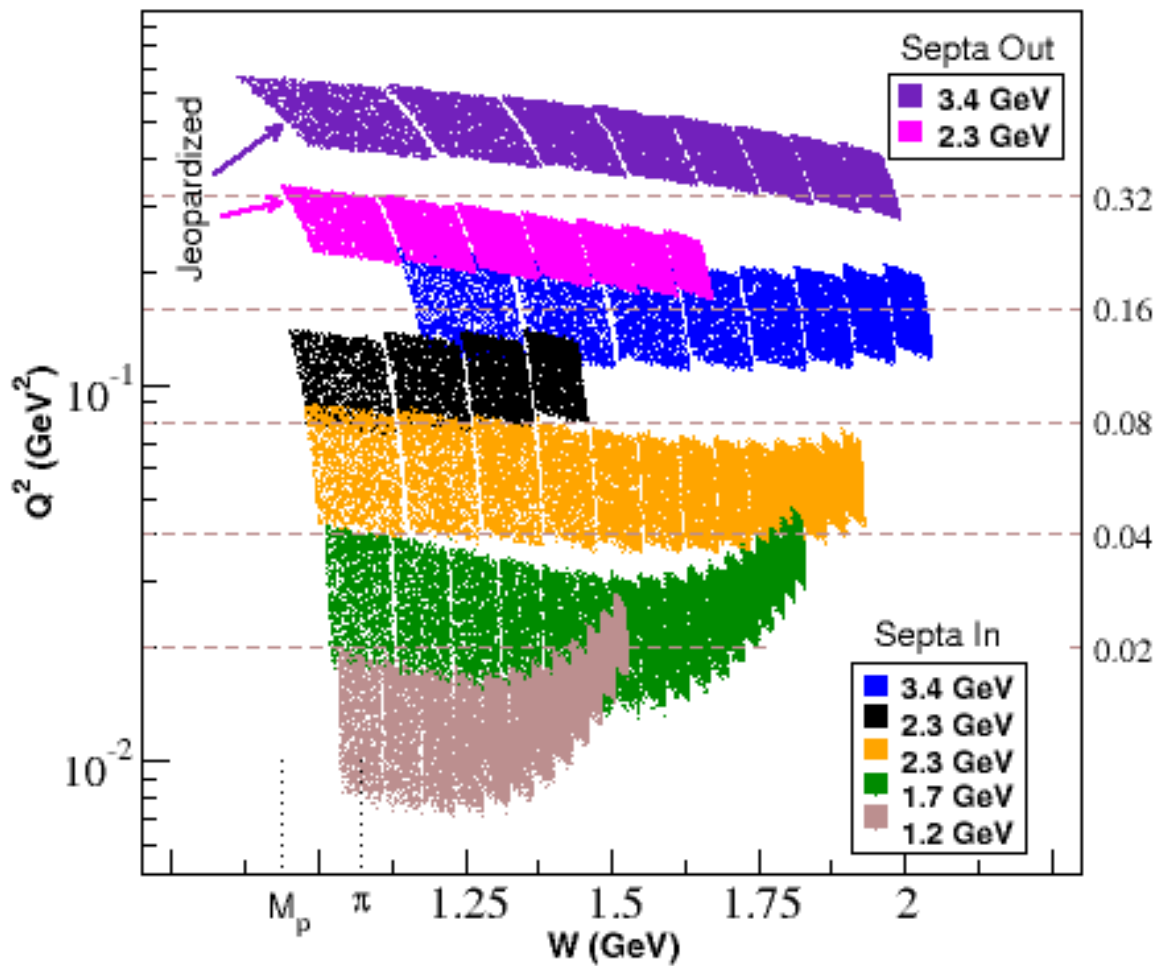
**57 days** : Septa In

two highest kinematics  
require alot of days

**54 days** : Septa Out

**42 days** : Transition

# Previously Planned Coverage



57 days : Septa In

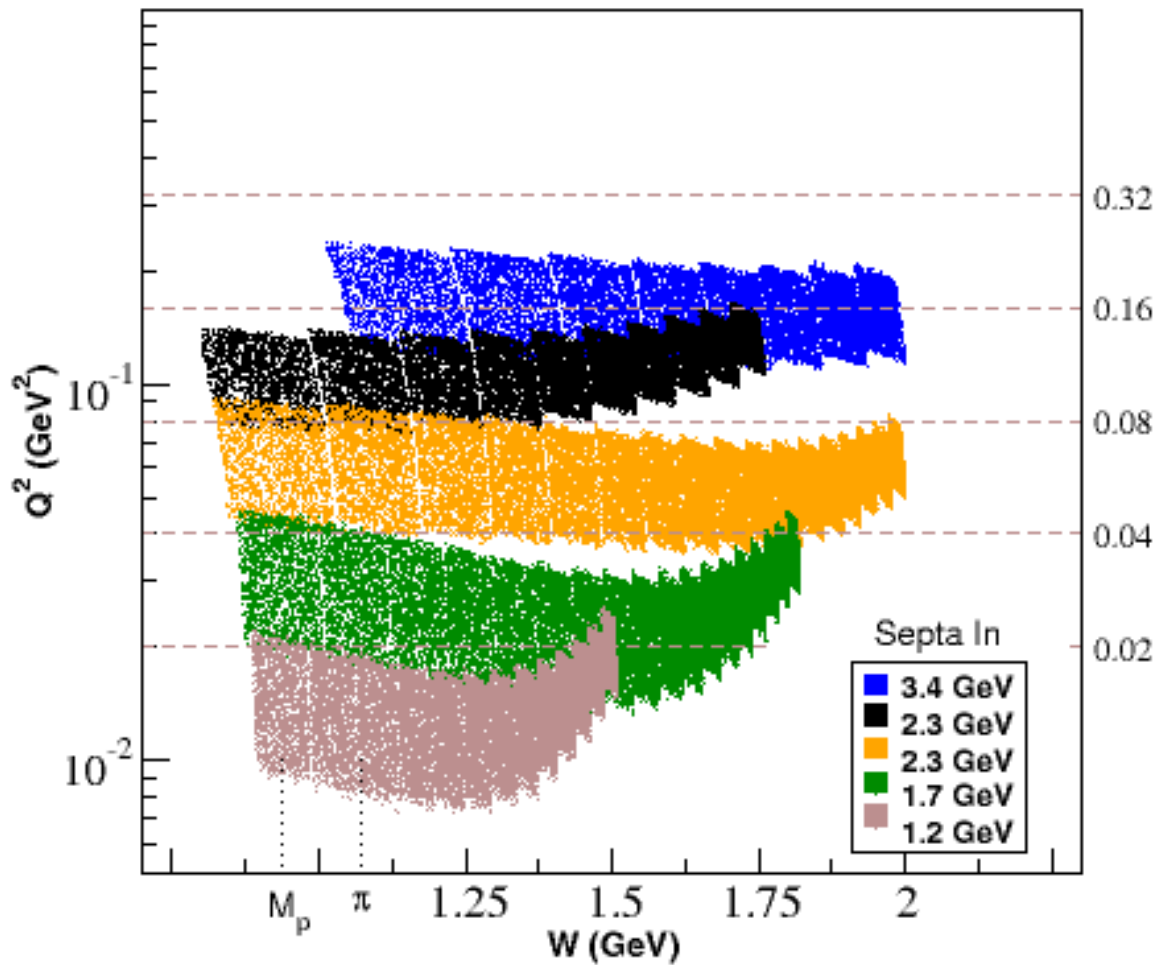
Best kinematics  
require a lot of days  
42 days : Septa Out

42 days : Transition

Delay to Feb.



# Reduced Kinematic coverage



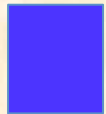
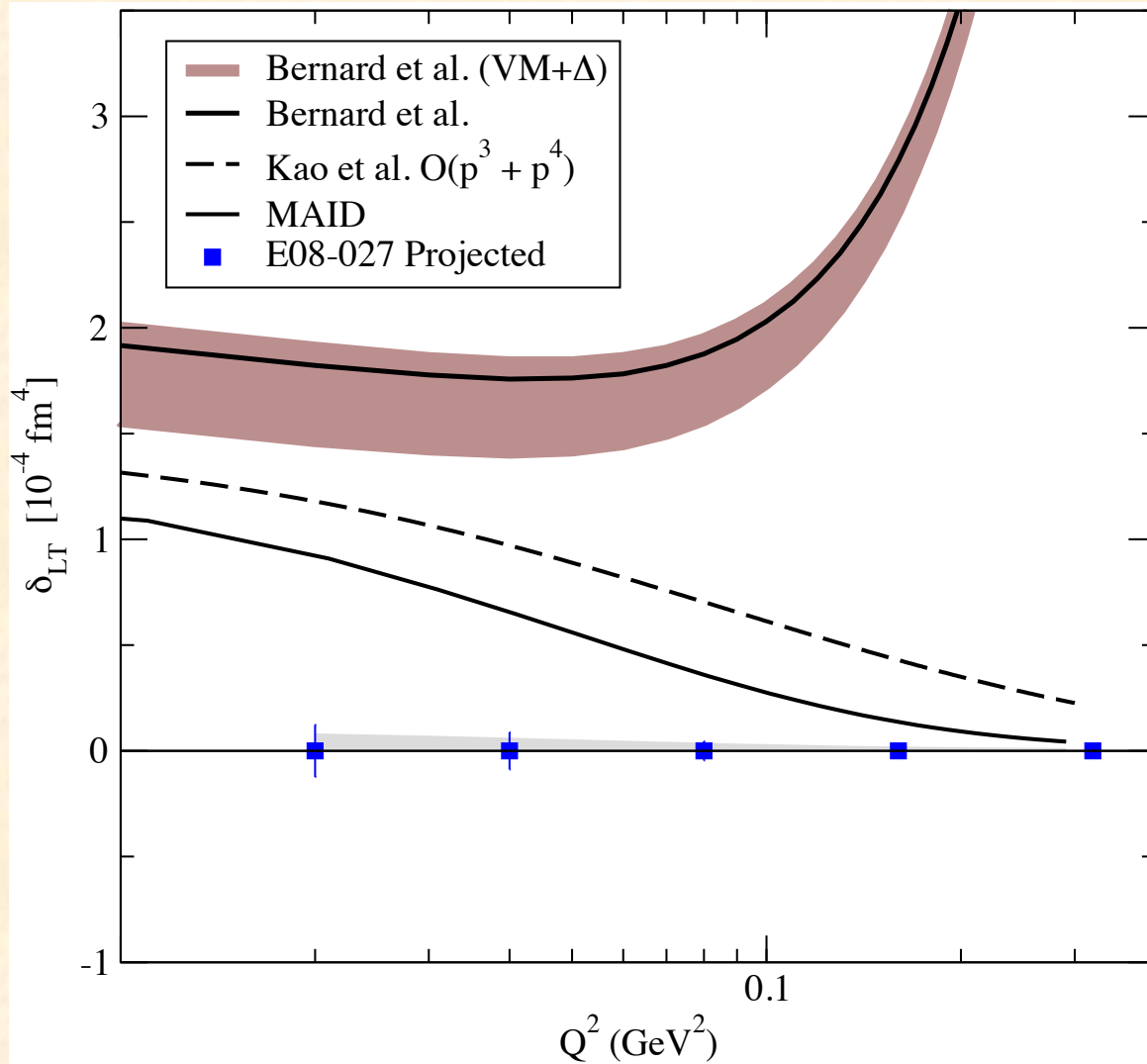
## Lose 2 highest Energies

extend 2.2 GeV bands to large  $W$

Spend additional time on elastic

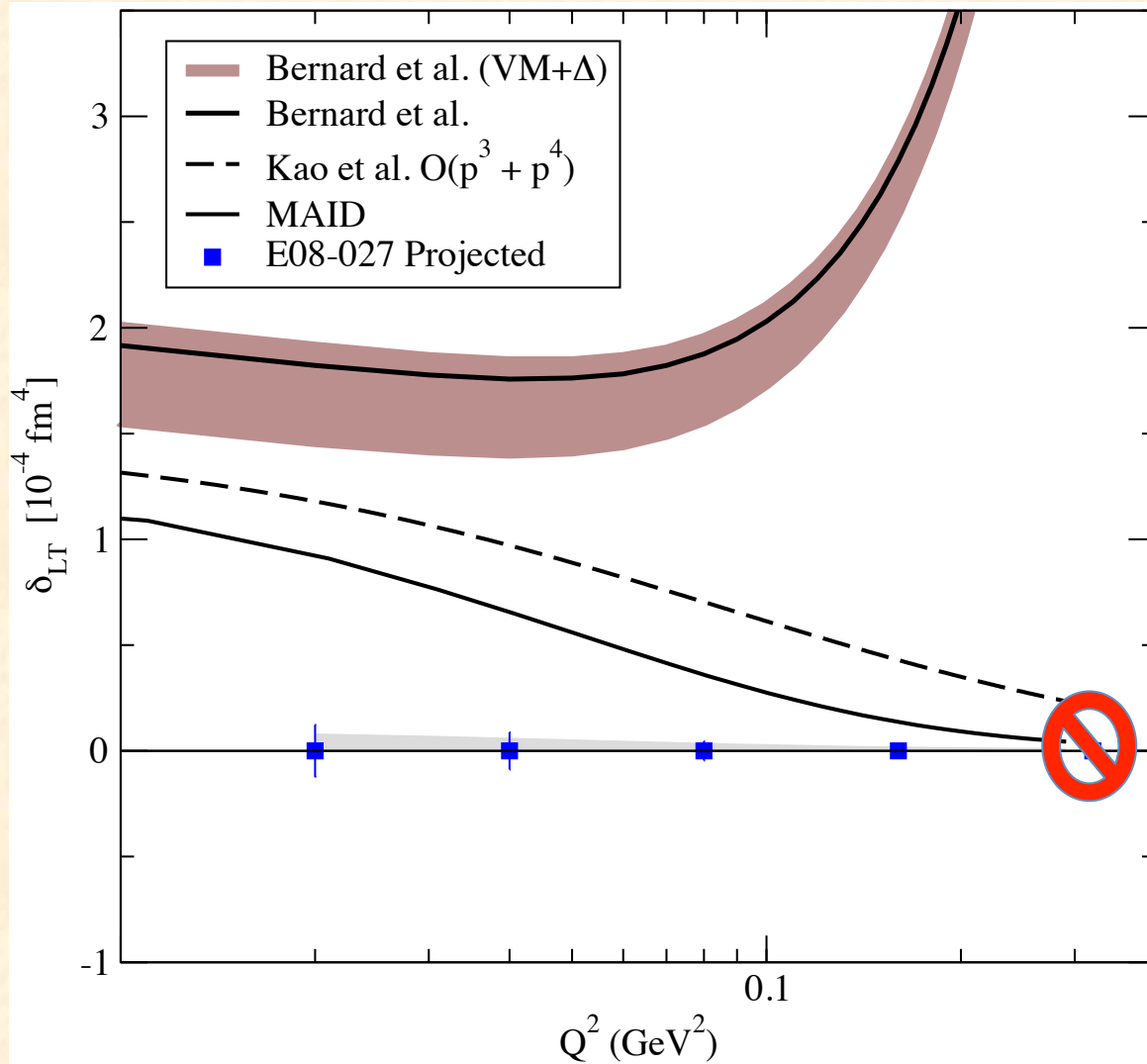
Start Production  
in Feb. whenever poltarg  
installation is complete

# Impact on E08-027

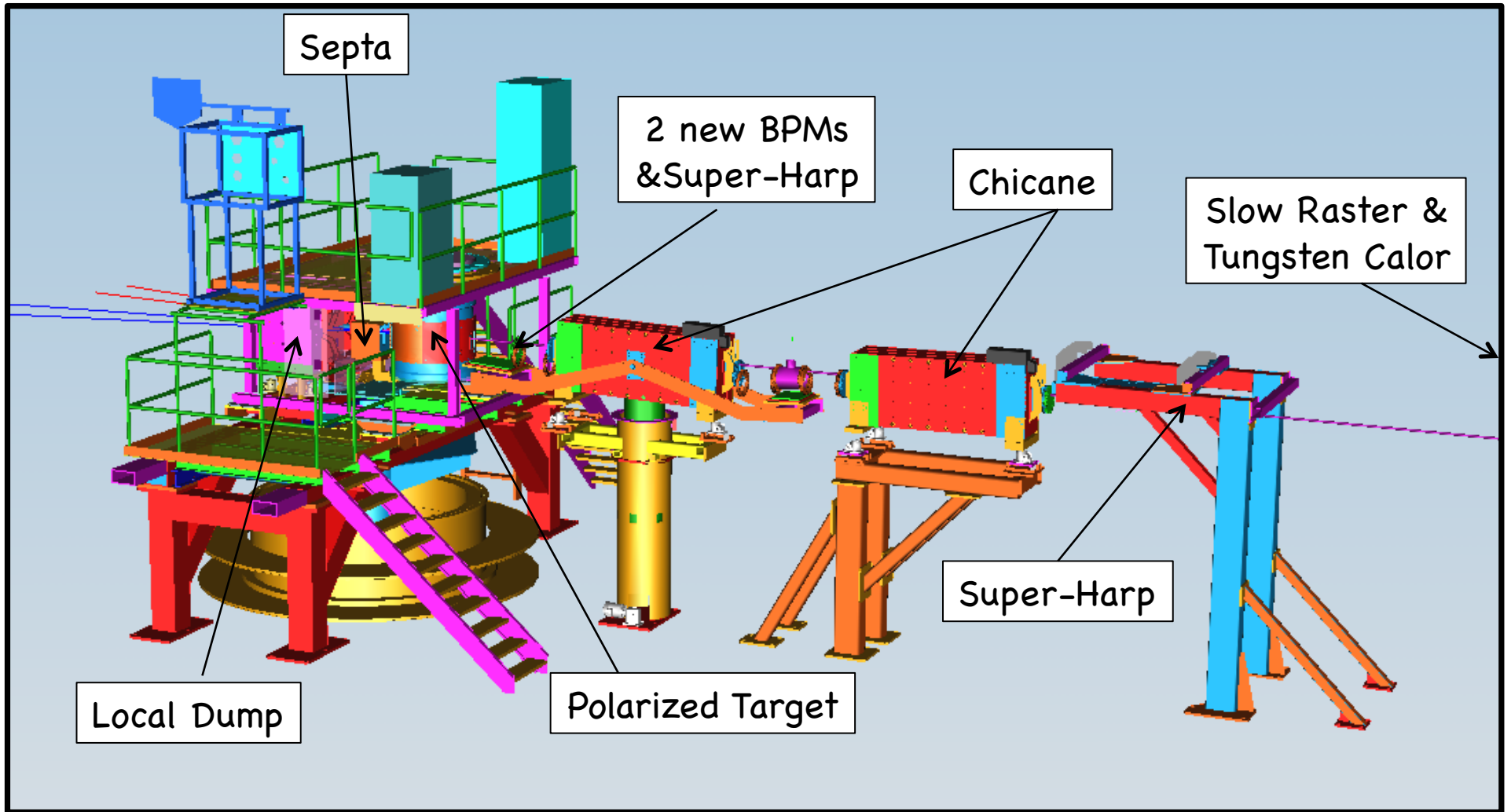


Projection for the LT spin polarizability

## Impact on E08-027



We lose the highest interpolated  $Q^2$  point



## Commissioning Status

no poltarg, chicane or dump commissioning yet

## Upstream mods

Slow raster

New BPMs/BCMs

Tungsten Calorimeter

# PVC pipe, He gas flow and Carbon target

Only target used during December commis





# Chicane

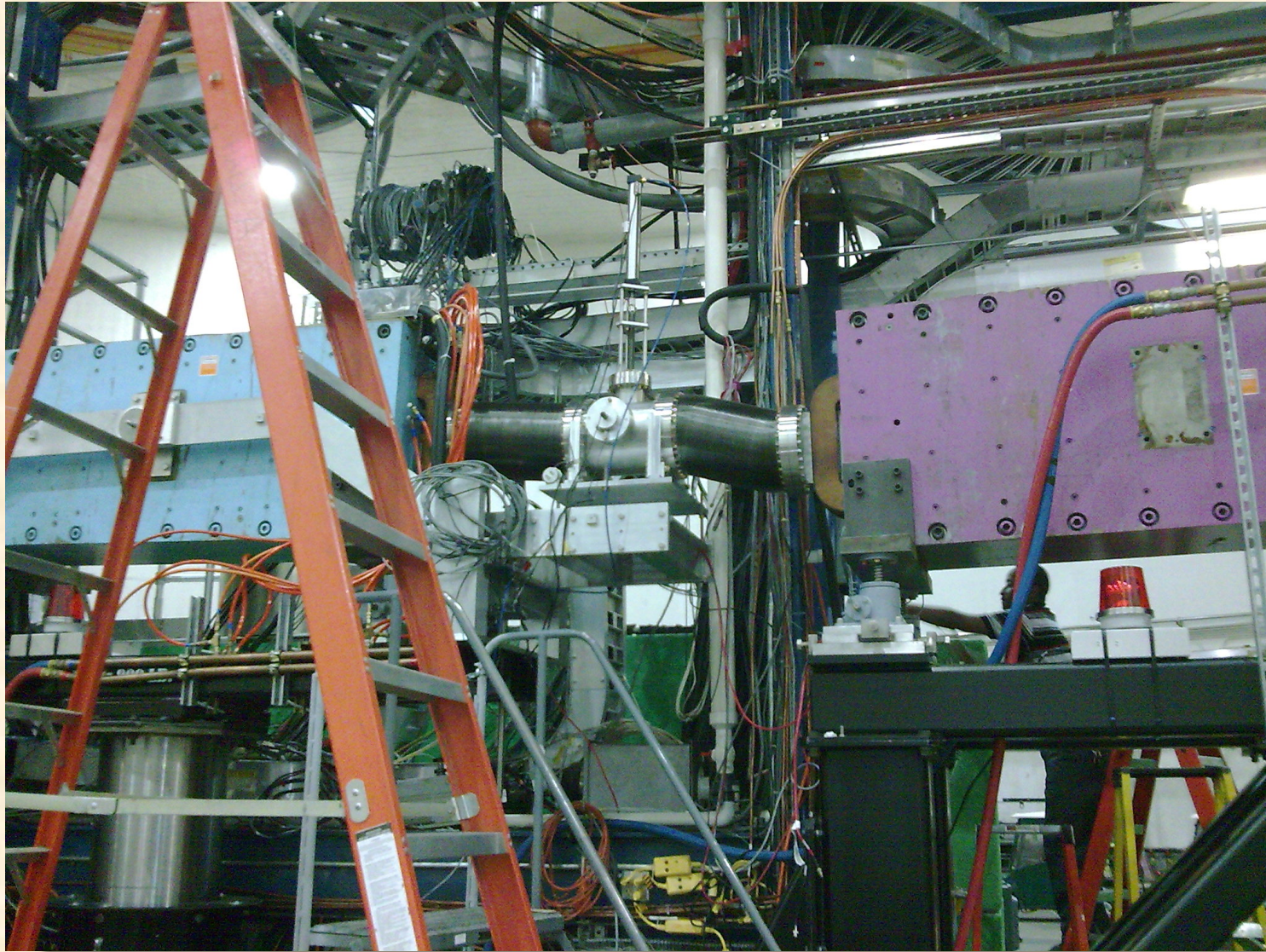


**Won't be commissioned during December**

*Figs courtesy T. Mikalski*



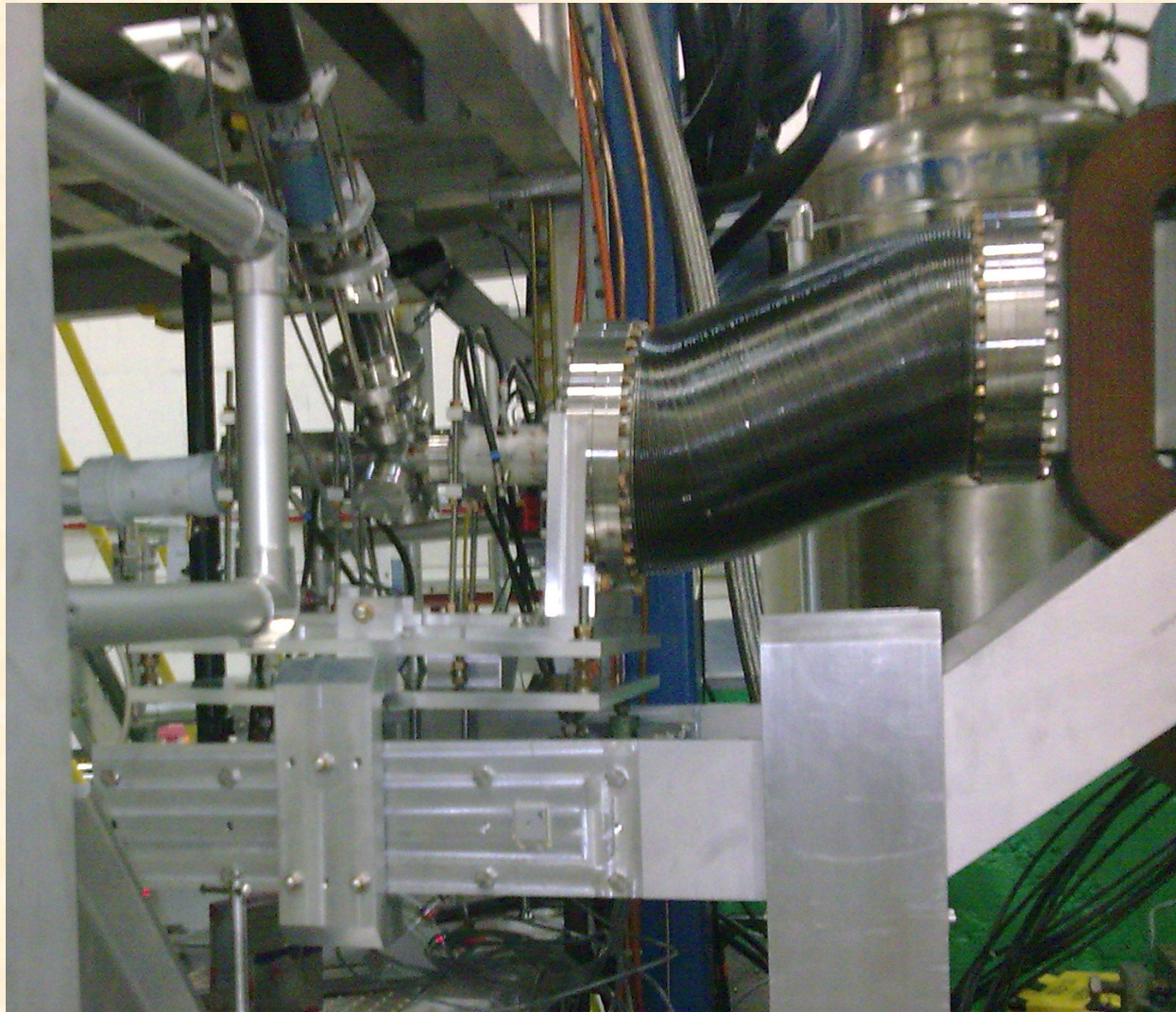
# Chicane connected with flexible bellows





# Misalignment of beamline

when vacuum first pulled on chicane bellows



## temporary fix

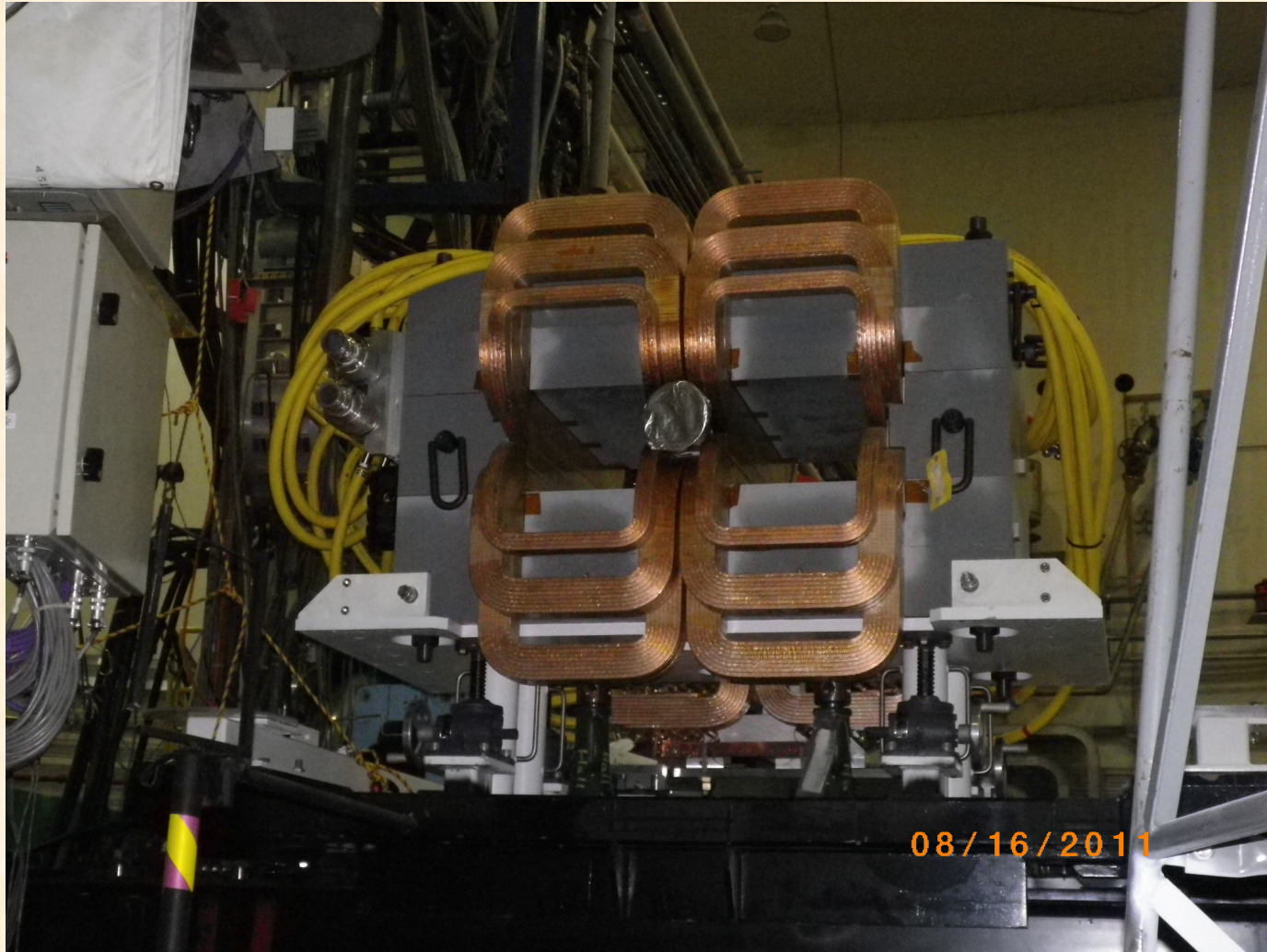
horizontal spacer

beefed up flange bracket



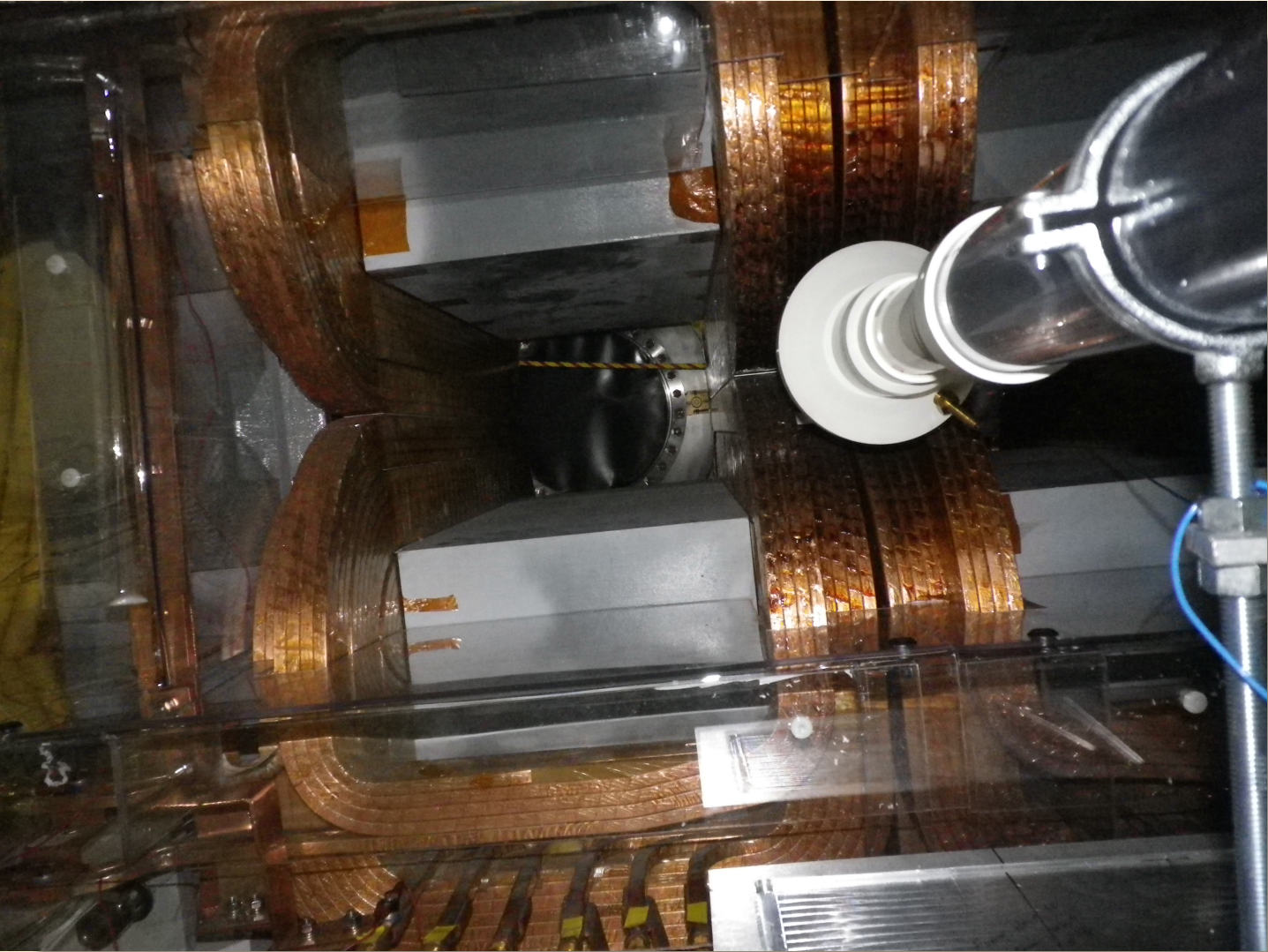
## Room Temperature Septum Magnets

- Used in Prex, modified with new coils.
- bend  $5.6^\circ$  to  $12.5^\circ$
- allow access to lowest possible  $Q^2$

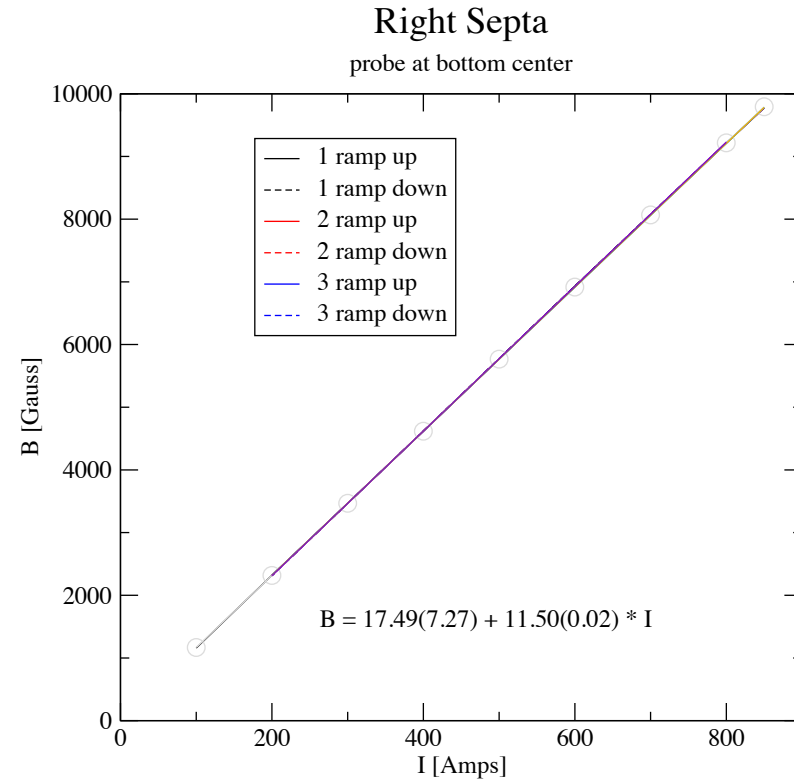
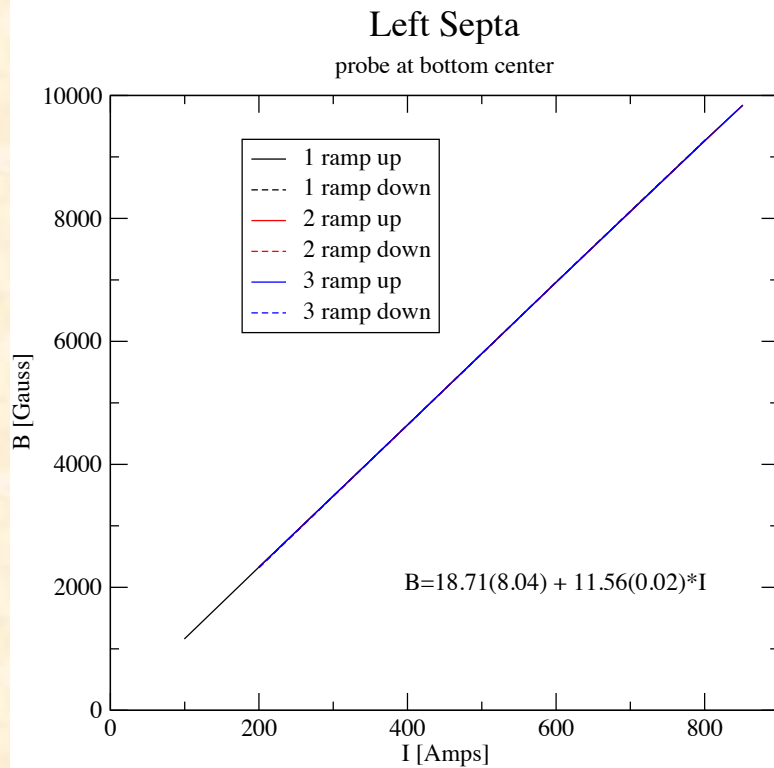




# Room Temperature Septum Magnets



# Septa B vs I curve



ramped up/down to 850A three times.  
reproducible to about 7-8 gauss ( $10^{-3}$  level)

Jixie Zhang  
Min Huang

Ramped right arm PS to 1000A, held for half hour.

# Spectrometer Magnets

LD1 : 480VAC current draw seems a little unstable at 1000A, but has been this way for a while.

RQ1 : has some issues with output stability.

RQ3 : limited to 100A output.

Relative clean bill of health from Jack

some issues to look into during January.



## Tungsten Calorimeter

Commision today

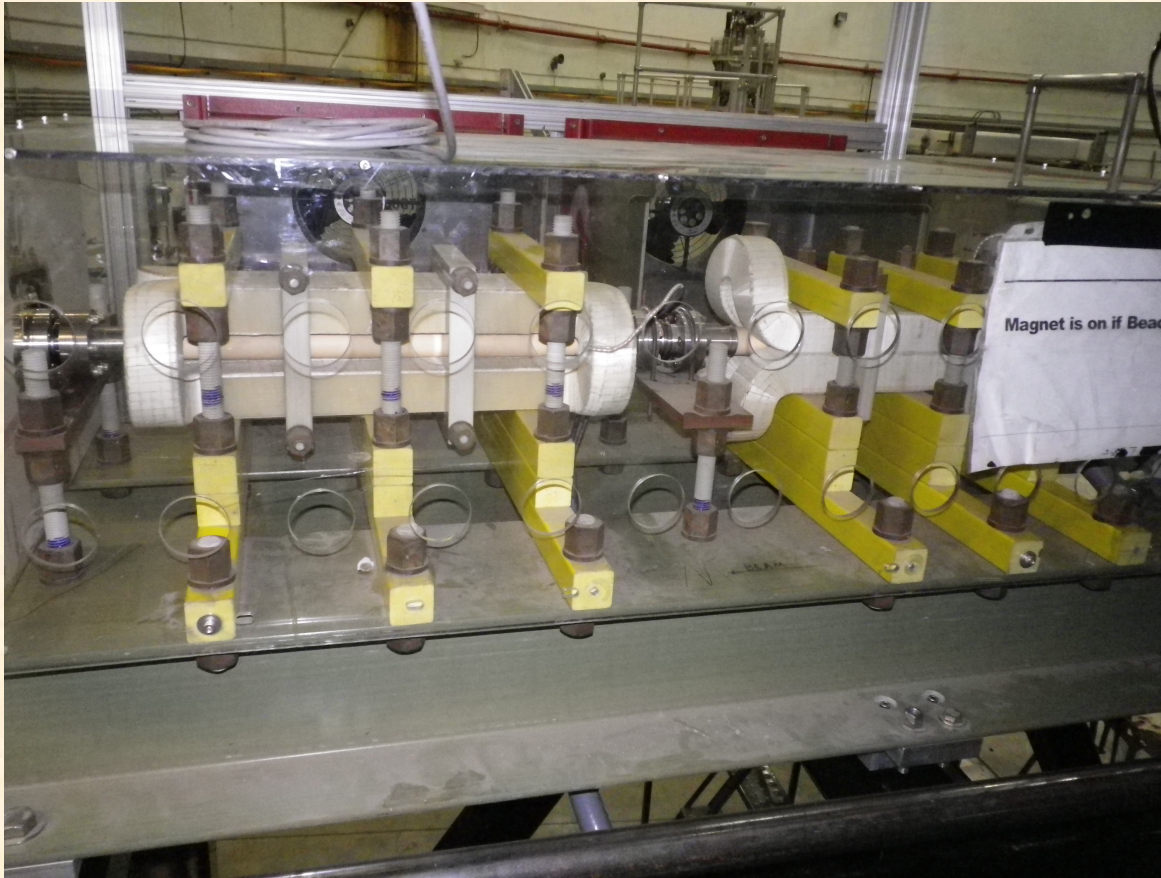
*Figs courtesy T. Mikalski*



# Slow Raster

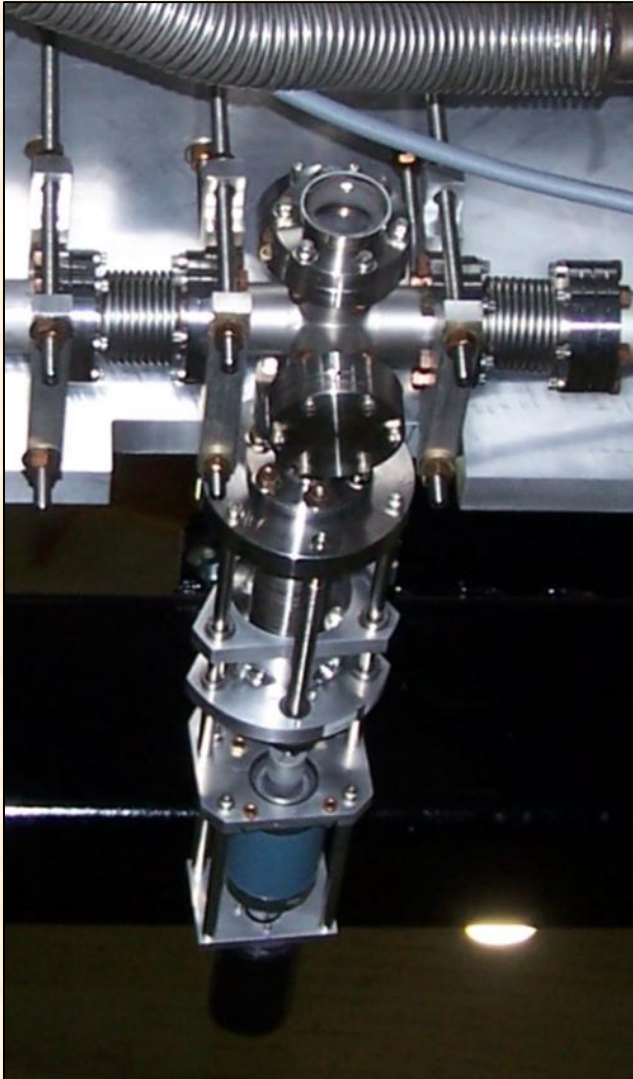
assembled, in place.

Commission today.



A. Camsonne  
Pengjia Zhu





## Superharp

20 um wire for low current

New fork design

New controller chassis – PC104 w/ new SW

Some concern over the fragility of the wires.

*Figs courtesy T. Mikalski*

## Left and Right DAQ

Ryan Zielinski  
Vince Sulkosky  
A. Camsonne

**Happex crates** have been successfully implemented into the DAQ on both arms

A **third Fastbus crate** has been installed in the Left HRS.  
(can directly to compare to RHRS)

**SFI Sequencer** working. Worked out a lot of bugs.  
will be tested during commissioning.

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**Goal** : 6kHz with 20% Deadtime

**Achieved:**

3.8 kHz with 13% Deadtime. Prescaler of 3 on T1

4.4 kHz with 20% Deadtime. No Prescale

# Replay, Scripts, Analyzer

Toby Badman

Worked out a lot of bugs

Start/End Run

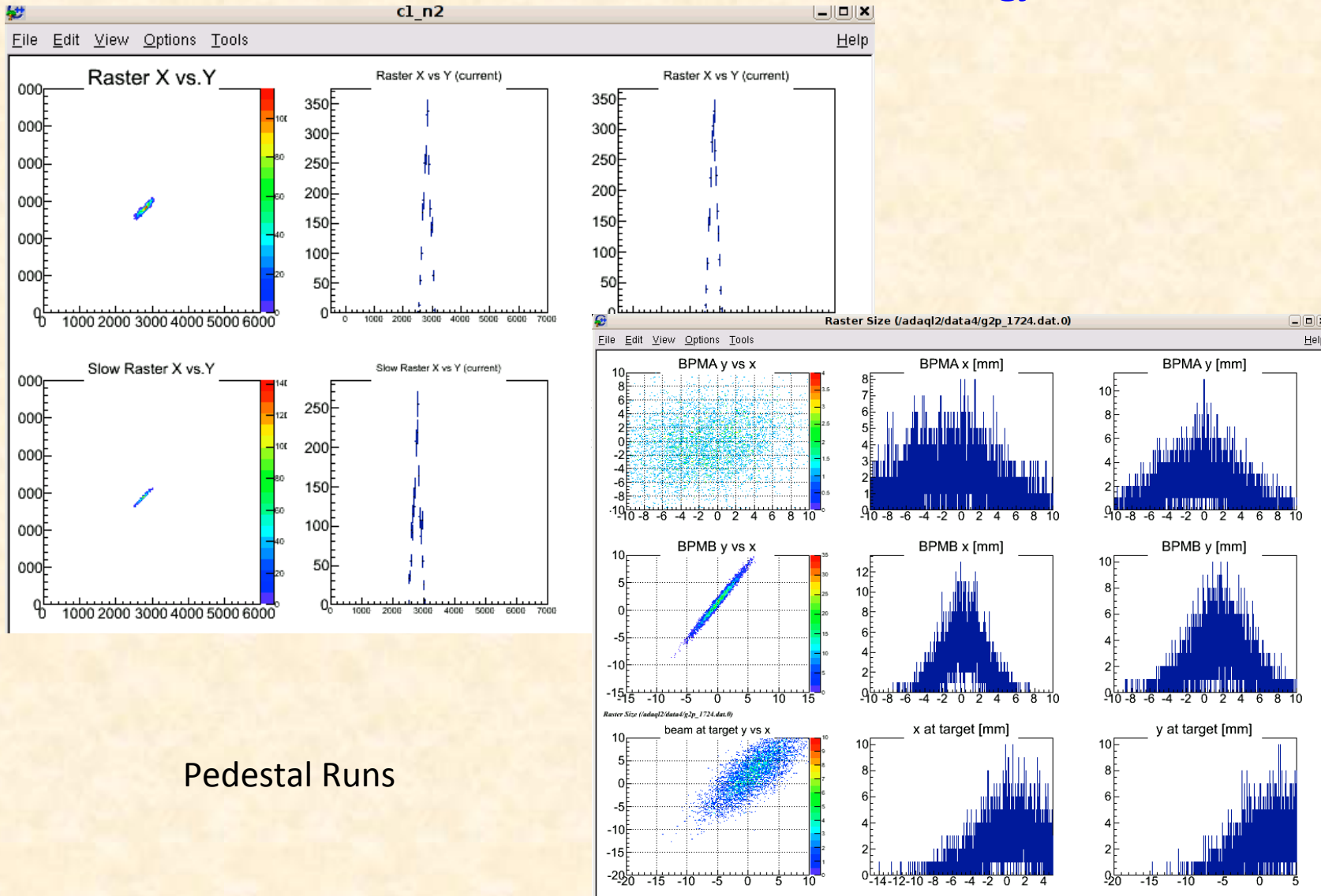
Replay scripts crashes fixed. (VM problem).

Online Replay Gui

A vm limit was set on adaq at 1GB per process which caused the replay script to crash during a run.

# Spot ++

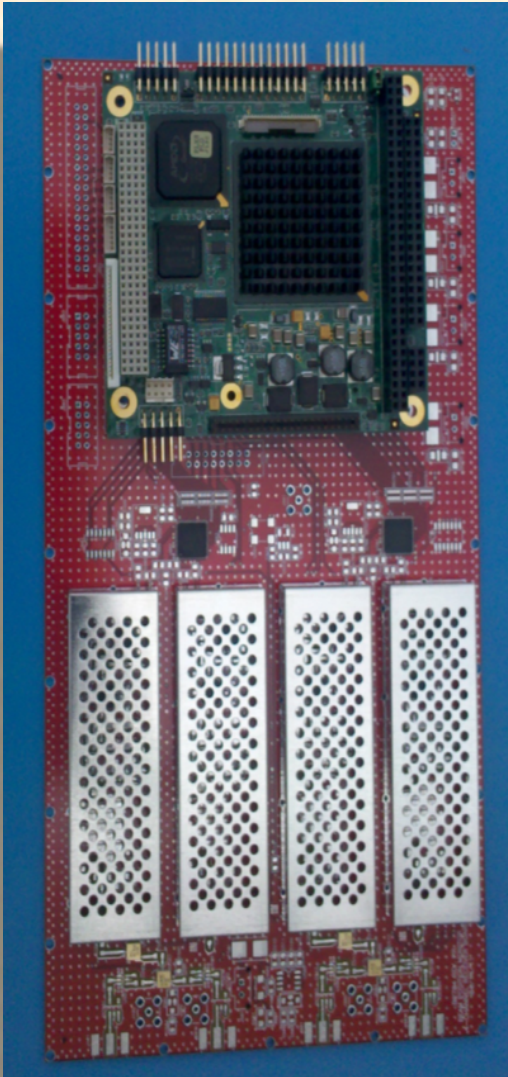
Pengjia Zu, A. Camsonne



Pedestal Runs



## BPM/BCM w New Receivers



New 4 channel receiver design – tailored for low current measurement  
M15 antenna style BPMs  
standard BCMs

Dynamic Range - (50 - 150 nA)

Resolution/Accuracy - 100  $\mu$ m

Output Rate - 2 kHz

**Bench tests performed. Looks promising.**

**Expect complete in mid-Jan.**

# 3<sup>rd</sup> Arm Detector

Goal : supplementary 5% measurement of  $P_b P_T$   
HV good, 3<sup>rd</sup> DAQ running



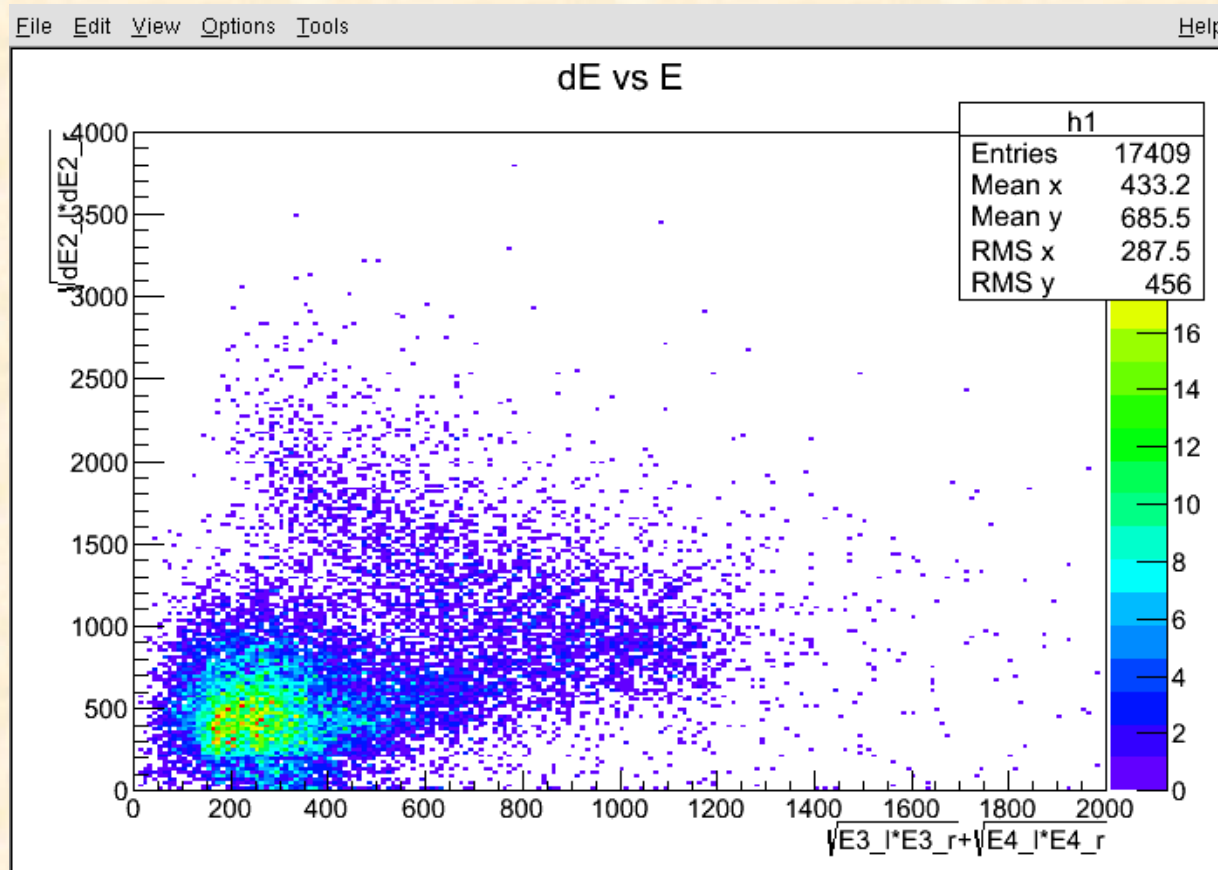
Kalyan Allada  
Chao Gu



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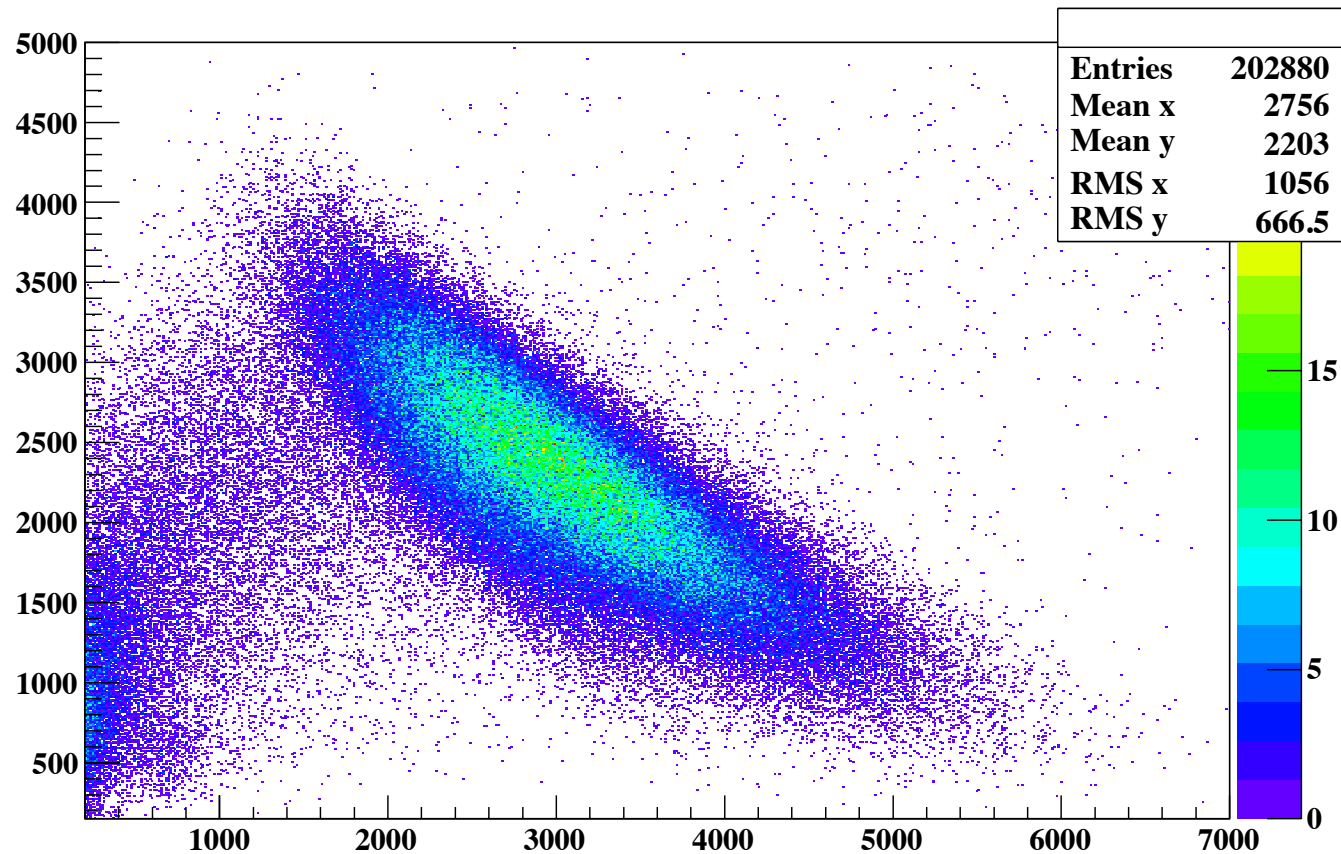
Independent DAQ

threshold adjustment underway

# Detector Checkout

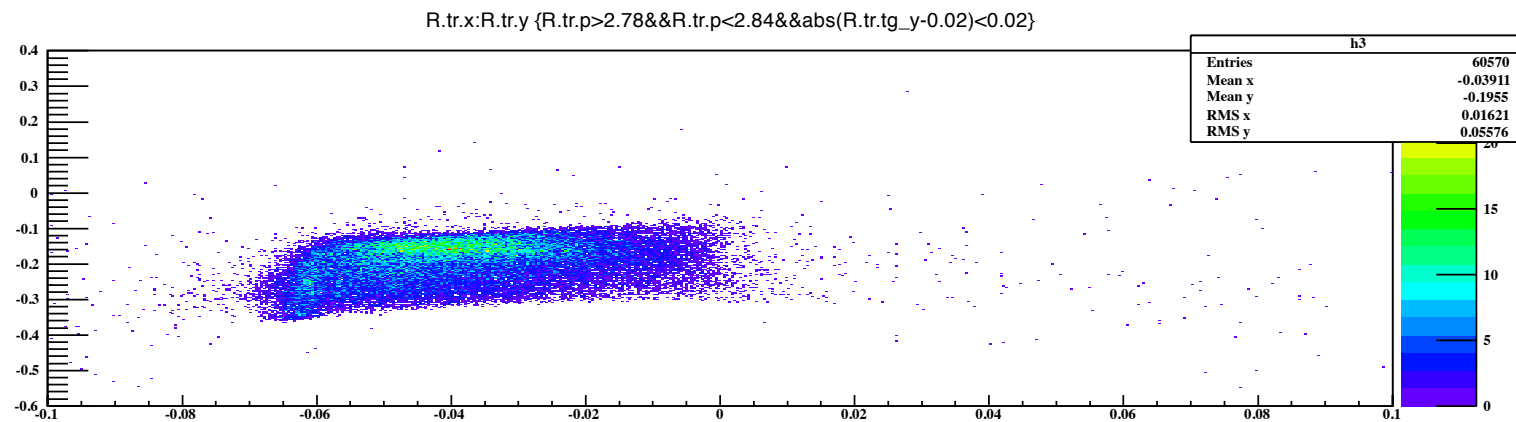
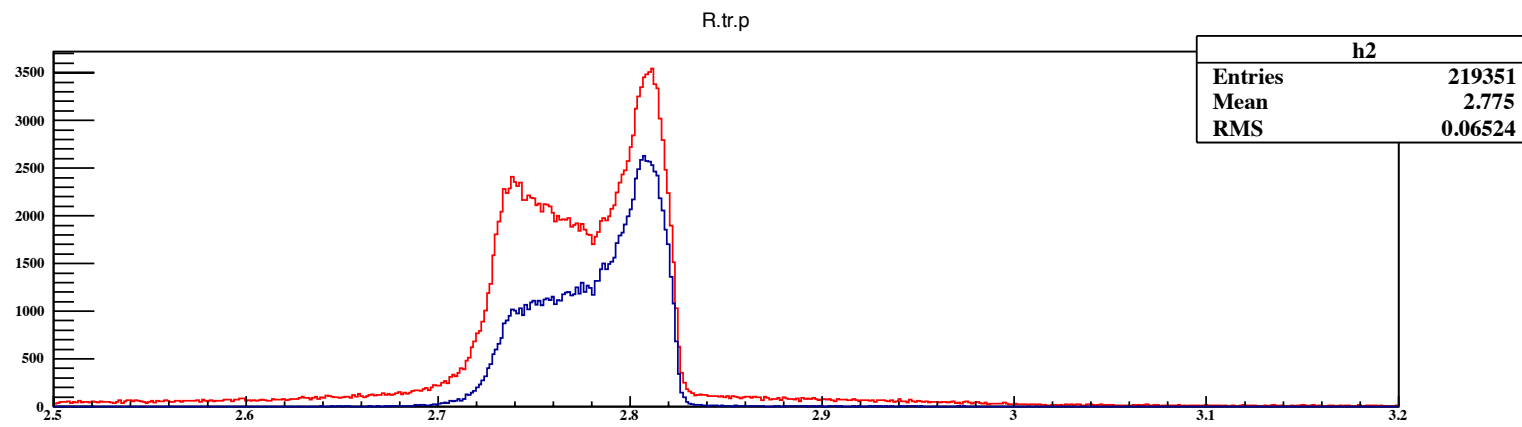
Melissa Cummings,  
Ryan Zielinski

R.ps.asum\_p:R.sh.asum\_p



# Elastic Peak

Melissa Cummings



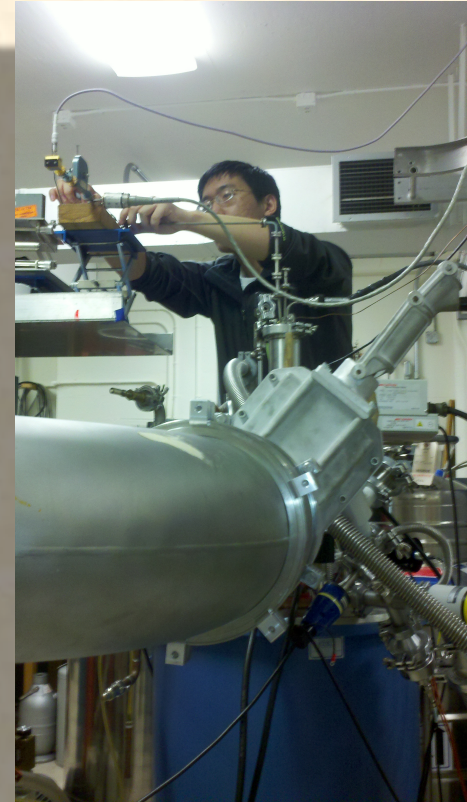
Able to observe peak and move it across focal plane with Septa

# Target work at UVA and NIST

Optimizing 2.5T running

Irradiating target samples

Training experts for the run.



Chao Gu

Toby Badman

## Summary

### **Installation “complete”.**

still have to complete the low current BPM software  
Poltarg installation in January.  
Commission the chicane

### **Commissioning very productive so far.**

- beamline vacuum issues discovered
- checkout septa
- checkout Beamline diagnostics.
- Happex Daq
- Daq at higher rate.
- Detector Checkout
- 3<sup>rd</sup> Arm

### **Start Production in Feb**

Poltarg repairs on schedule

**Thanks to all who are working so hard on g2p !**

in particular

**Tim Michalski**

**Ed Folts**

**Jack Segal**

**Aidan Kelleher**