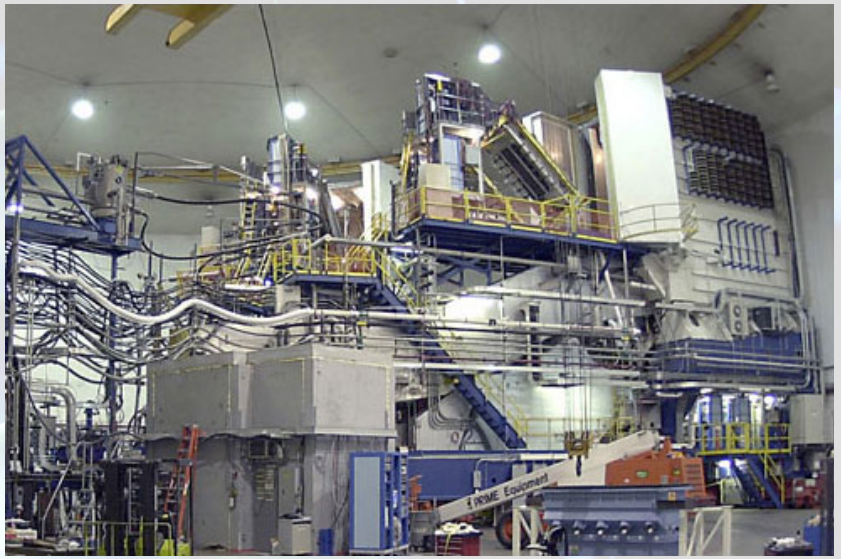
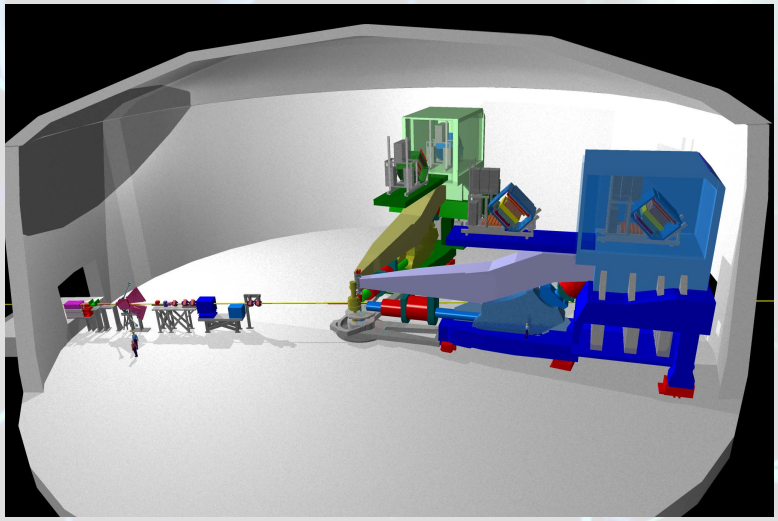
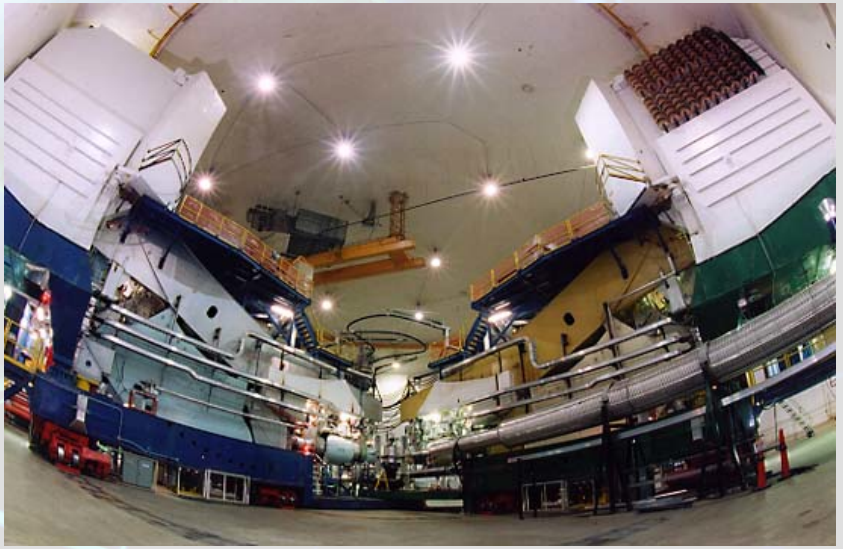
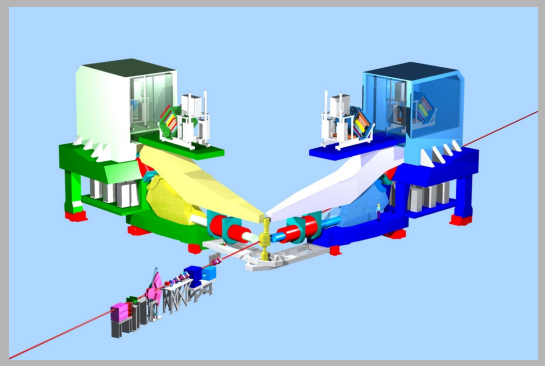
Hall A Update

Thia Keppel









Hall A Planning

- 3 A-rated experiments in first years of running
- G_M^p (HRS-R) and DVCS (HRS-L + calo) run is combined
- Some flexibility incorporated

16 mo. Shutdown

12 GeV Commissioning

Early Experiments

DVCS-I and G_M^p

Access to GPDs

EM Form Factor

Photon calorimeter to be installed on floor

$^3H/^3He$ APEX/PREX (A1n)

d/u at High x

Requires tritium target, venting system and BigBite spectrometer

Dark photon A' /Neutron skin

Both require additional small angle septum magnets

Neutron spin structure

Polarized 3He target

SBS Experiments

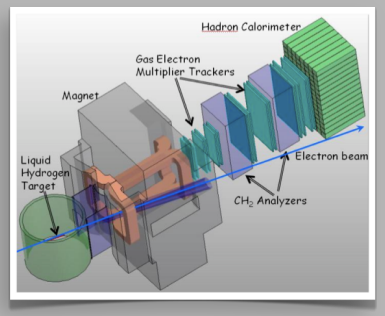
EM Form Factors at high Q^2

12 GeV Projects:

1. Moller polarimeter
2. Compton polarimeter
3. Energy measurement upgrade

SBS Project

SuperBigbite Spectrometer



Beam 1st to Hall A

11 GeV

FY 2013	FY 2014	FY 2015	FY 2016	FY 2017

commissioning beam

http://opsweb.acc.jlab.org/TJ3/PlanF/AcclAcclI.html

12GeV Commissioning

Overview | Status | Run Period Plans | Run Period Resources | Commissioning Goals | Path To Beam Operations | Group Plans | Fiscal Years | Test Scenario

LSD | HCO | AccI | AccIAccII | AccII | AccIII | AccIV | PhyI | PhyII | PhyIII | PhyIV | PhyV | PhyVI

9.2.5	**Beam to End of South Linac**	**Section 3.3 o...**	**Wed 2014-01-22 16:00**	**Fri 2014-01-24 04:00**	**0%**	
9.2.5.1	Establish Tune Beam 2S du...	This task t...	Wed 2014-01-22 16:00	Fri 2014-01-24 04:00	0%	
9.2.6	**Beam to the 2R dumplette**	**Section 3.3 o...**	**Fri 2014-01-24 04:00**	**Fri 2014-01-31 08:00**	**0%**	
9.2.6.1	Establish Tune Beam to 2R...	Section 3.3...	Fri 2014-01-24 04:00	Fri 2014-01-24 16:00	0%	
9.2.6.2	Beam based measurements	Section 3.3...	Sat 2014-01-25 08:00	Sun 2014-01-26 08:00	0%	
9.2.6.3	Tool and Configuration Fi...	Section 3.3...	Sun 2014-01-26 08:00	Sun 2014-01-26 20:00	0%	
9.2.6.4	Raise the gradient: Engag...	Section 3.3...	Sun 2014-01-26 20:00	Fri 2014-01-31 08:00	0%	
9.2.7	**Establish 2.2GeV/pass beam...**	**Section 3.3.5...**	**Fri 2014-01-31 08:00**	**Sat 2014-02-01 04:00**	**0%**	
9.2.7.1	Establish 2.2GeV/pass bea...	Section 3.3.5...	Fri 2014-01-31 08:00	Sat 2014-02-01 04:00	0%	
9.3	Acc-I Schedule Contingency		Sun 2014-02-02 00:00	Thu 2014-02-06 00:00	0%	
9.4	Termination Tasks	Terminate Bea...	Thu 2014-02-06 00:00	Thu 2014-02-06 04:00	0%	
10	**12GeV CEBAF Commissioning**		**Thu 2014-02-06 04:00**	**Fri 2015-06-12 01:00**	**0%**	
10.1	SAD I	Tasks for t...	Thu 2014-02-06 04:00	Tue 2014-03-04 04:00	0%	
10.2	**Accelerator Period II: E>1....**		**Tue 2014-03-04 04:00**	**Fri 2014-05-02 04:00**	**0%**	
10.2.1	3-pass spin up (BSY)		Tue 2014-03-04 04:00	Tue 2014-03-11 05:00	0%	
10.2.2	Hall-A Detector Checkout		Tue 2014-03-11 05:00	Fri 2014-03-14 17:00	0%	
10.2.3	1/2/3 pass Magnet/Optics c...		Fri 2014-03-14 17:00	Fri 2014-03-28 17:00	0%	
10.2.4	AccII pre-SADII Schedule C...		Fri 2014-03-28 17:00	Fri 2014-04-04 06:00	0%	
10.2.5	SAD-II	SAD-II one we...	Fri 2014-04-04 06:00	Fri 2014-04-11 02:00	0%	
10.2.6	5.5-pass spin up to D		Fri 2014-04-11 02:00	Fri 2014-04-25 02:00	0%	
10.2.7	4/5/5.5 pass Magnet/Optics...		Fri 2014-04-25 02:00	Fri 2014-05-02 02:00	0%	
10.2.8	AccII Schedule Contingency		Fri 2014-05-02 02:00	Fri 2014-05-02 04:00	0%	
10.3	May 2014 Power Meter Readin...	All CEBAF sys...	Thu 2014-05-01 08:00	Thu 2014-05-01 08:00	0%	

All effort and duration values are in weeks. 24/7 scenario

Container Task Normal Task Milestone

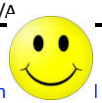
Off-duty period

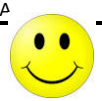
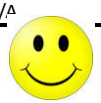
There was (checkout) beam in the Hall weeks ago!

Hall Base Equipment Checkout Activities

LEFT-TO-RIGHT INCREASING PERCEIVED LEVEL OF DEMAND

	BPM and Beamline Transport including polarimeters	Raster	Beam Charge Measurement (Unser + BCM calibration)	Beam Energy Measurment (Full Arc)	HRS Spectrometer, Detector Checkout	Cryotarget Checkout	Moller Polarimetry	Beam Charge Measurement ("Ag" calo only) - not likely to use	Beam Energy Measurment (Spectrometers)	Compton Polarimetry**	Beam Energy Measurment (Single Hall Spin Dance)	First Run Physics (GMp and/or DVCS)
Point of Contact	Yves	Bob	Javier	Doug	Bogdan, John	Jian-ping	Javier	Doug	Doug, Bogdan	Sirish	Doug	Bogdan, Alexandre
BEAM PARAMETER												
Current Range	~5 - Imax uA	any	0 - Imax**** uA	~5uA*	2 - 10 or more uAmps	5, 20 - 80 or more uAmps	0.2-1uA CW	< 5uA	10 or more uAmps*	1-80 uA	> 5uA*/***	5, 20 - 50 or more uAmps
Duty Factor	pulsed/CW	CW	CW	CW**	CW	CW	pulsed/CW	CW	CW	pulsed/CW	CW	CW
Energy Range	any	any	any	any	any	6 - 11 GeV	1.1, 4.4/6.6, 11 GeV*	power limited, up to ~2 GeV only	1 - 4.4 GeV	2.2 - 11*	any	6 - 11 GeV
Polarization	N/A	N/A	N/A	N/A	N/A	N/A	polarized	N/A	N/A	polarized	polarized	50, 70 - 100%
Spot size	N/A	N/A	N/A	N/A	N/A	raster required	N/A	N/A	N/A	80 um @ CIP	N/A	N/A




blue = initial checkout on l utili

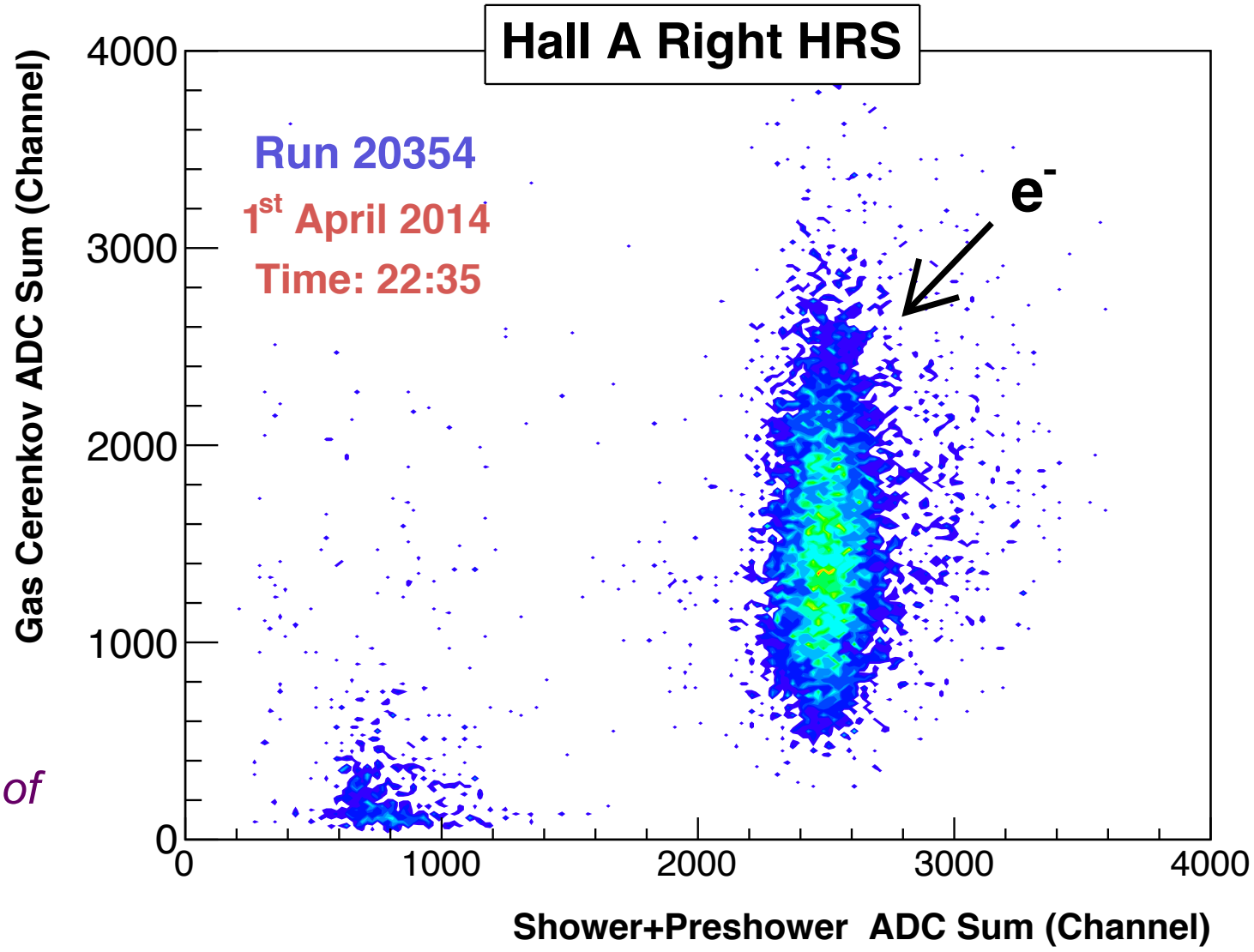
* energy lock required
** pulsed or CW for non-invasive, CW for invasive (high precision)
*** relative Compton polarimetry required at the ~1% level, Moller in addition preferred
**** lower max currents translate to increased systematic uncertainty

** Compton polarimetery ALSO requires (i) Compton chicane orbit lock, and (ii) beam (halo) background <1000 Hz/uA in photon detector.

- Hall not always priority, beam delivery not constant
- Didn't achieve high current CW
- Short run
- HRS magnet troubles

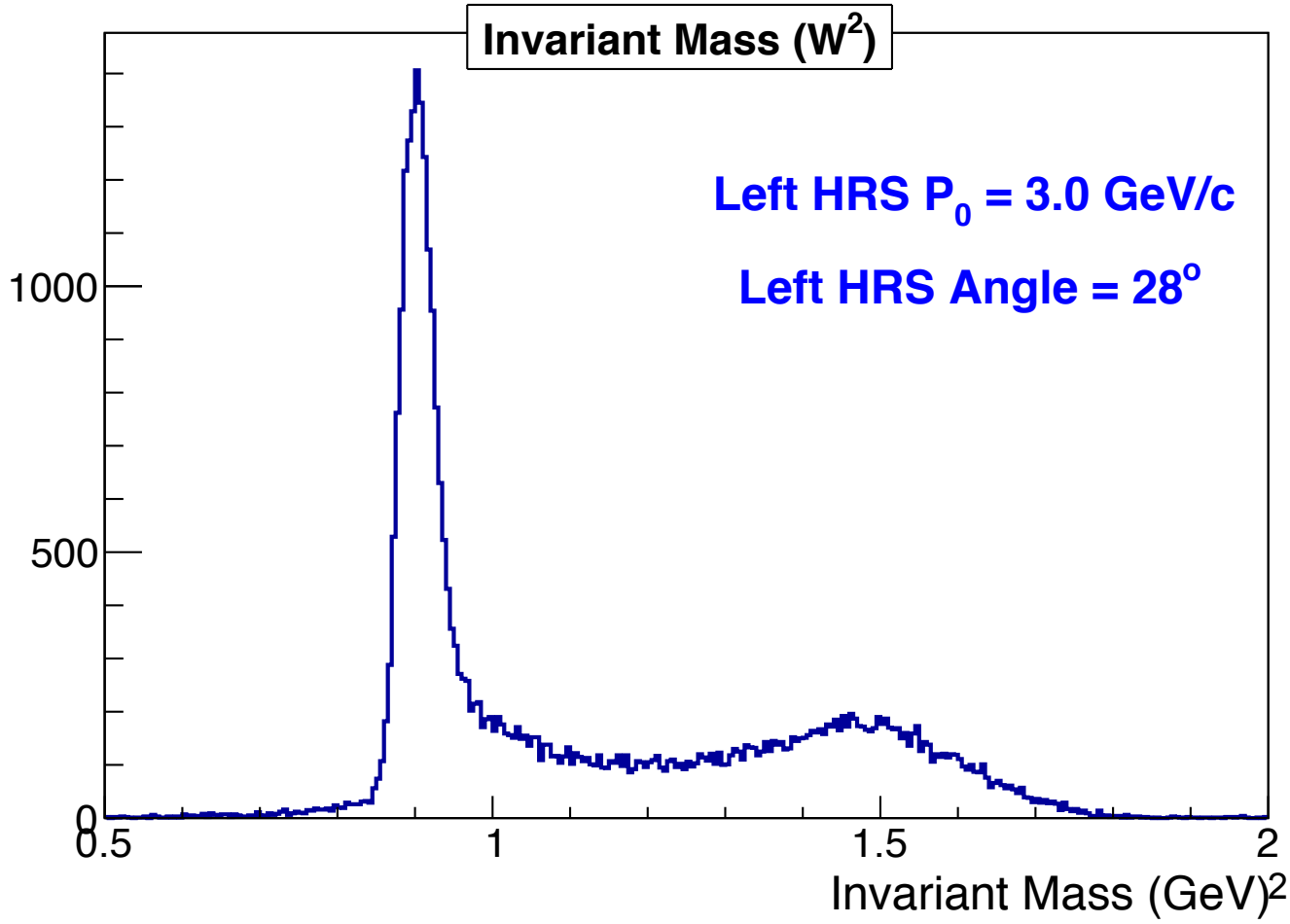
- Beamline upgrade successful
- HRS Detector checkout successful
- Spectrometer optics checks
- Moller commissioned
- Cryotarget functional
- Trigger, DAQ, software up and running

Electrons in Right HRS spectrometer at 2.0 GeV/c on carbon target *and set beam energy of 6.1 GeV!*



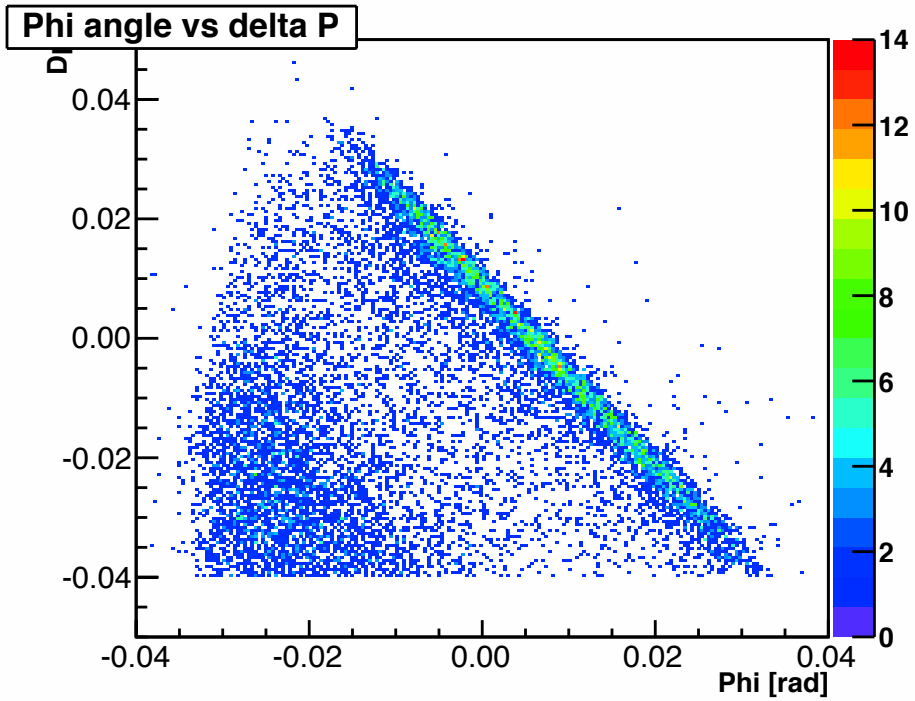
On JLab home page, also made DOE Office of Science "Headlines"

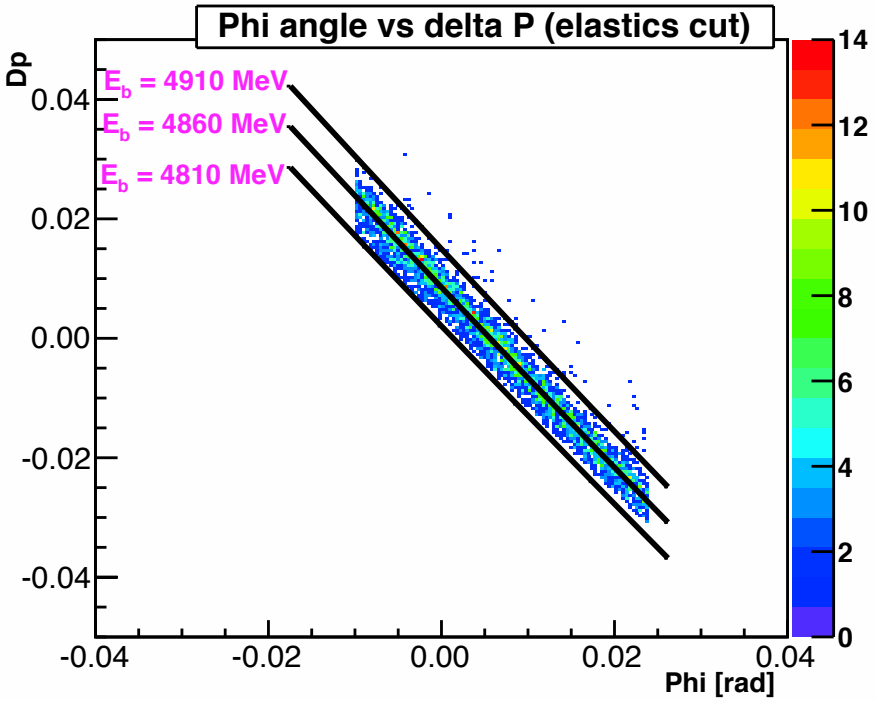
Electrons in Left HRS spectrometer at elastic kinematics on hydrogen target and set beam energy of 4.8 GeV – *reproduces proton mass*



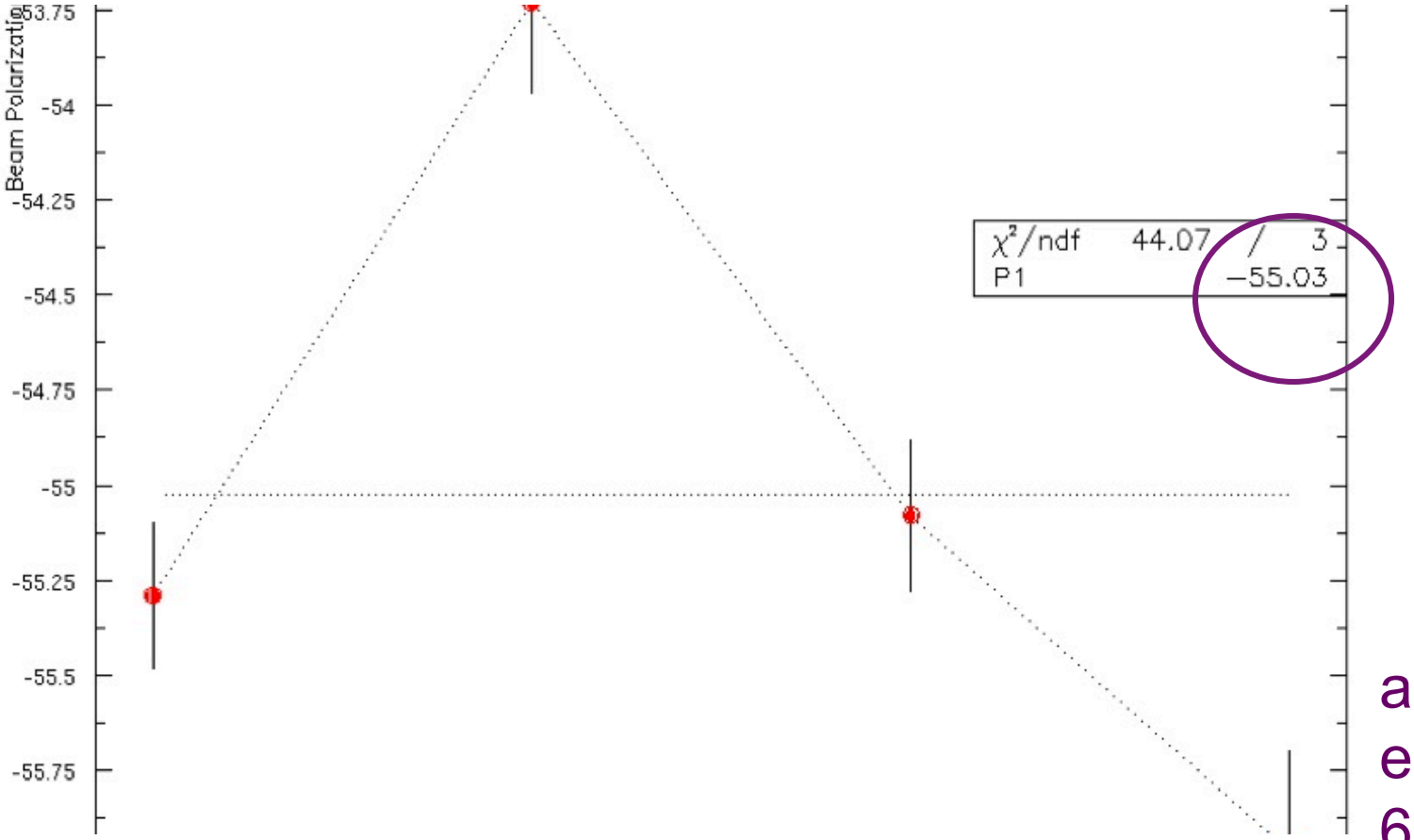
Beam Energy Determination

(The nominal beam energy was 4890 MeV.)





Moller Polarimetry



Thank you everyone who sat shifts and helped out!

accelerator estimate:
65.8
+4.9/-5.4
+1.7/-1.7 %

Hall A Projected Experiment Schedule as of 7/2013

	Spring	Fall	Spring	Fall	Spring	Fall	Spring
2014	Hall checkout (DVCS –I/ GMp)	DVCS - I/ GMp checkout					
2015			DVCS - I/ GMp	^{3}H/^{3}He			
2016					*A_1^n APEX*	*PREX CREX*	
2017							*A_1^n APEX PREX CREX DVCS-II*

SBS

MOLLER, SOLID...?....

Experiments in italics, being further out in time, have less scheduling certainty and could be rescheduled amongst the 2016,2017 run periods.
The 2017 period shown indicates a potential time for any not yet run.

available at: hallaweb.jlab.org/wiki/index.php/Main_Page#12_GeV_Era_Run_Schedule

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2016-2020

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printer version

PAC Resources

- PAC 41
- Proposal Submission
- Guidelines for Proposals
- Reports
- Archives
- Directory of Proposals
- Membership
- Summary Workshops
- Experiment Summaries
  6 GeV: pdf
  12 GeV: pdf

Program Advisory Committee Meeting - PAC41

PAC41 will be held during the week of May 19, 2014. This will be a special meeting to discuss the priority of already approved proposals for scheduling during the first 3-5 years of production running (beyond commissioning) in the 12 GeV era of CEBAF. The goal of this meeting is to provide input to the Lab scheduling process from the PAC in order to realize the highest impact program early in the 12 GeV running period.

We are not calling for new proposals to be considered at this meeting; new proposals will be considered at PAC42 to be held in July 2014.

Additional input has already been solicited and received for this PAC from the spokespersons of approved and conditionally approved experiments. This information, when combined with previously submitted proposals and updates, should be sufficient for the purpose of this PAC. Additional updates and presentations from the proponents will not be necessary.

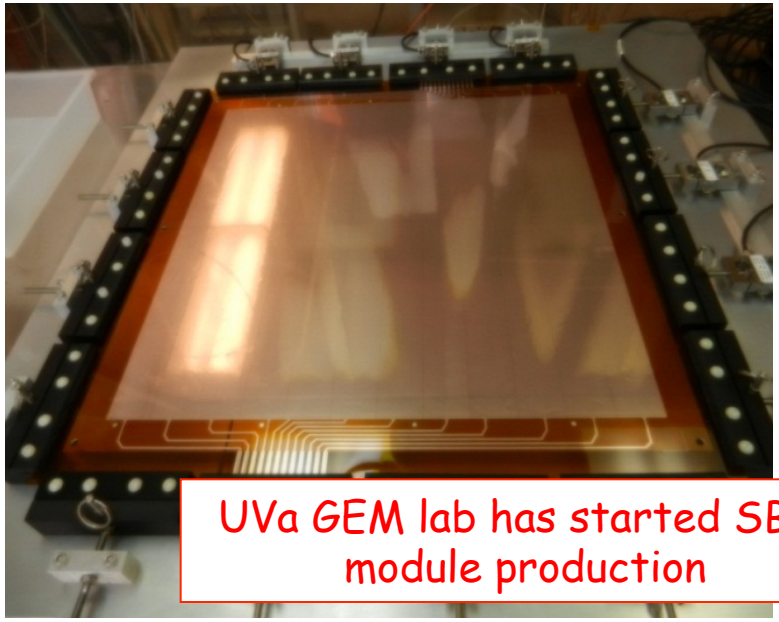
APEX could be ready 2016/2017

SBS Project Status

- 48D48 Magnet (+ support steel) delivered from BNL
  - Steel modifications complete
  - Power supply ordered
- GEM prototyping successful, production underway
- Successful annual review 11/2013
- Program proceeding on schedule
  - PMT-based coordinate detector option

Several engineering/design tasks complete

48D48 magnet delivered to JLab 8/13



UVa GEM lab has started SBS module production

Further future…

- MOLLER MIE preparing for Science Review this spring
- SoLID preparing for Director's Review this summer

We've also had administrative changes…

- Jefferson Lab reduction of force and restructuring
- Hall A and C science staff are combined
  - Organizing into expertize groups that combine staff from both Halls (for instance detectors, beamline,…)
  - Meetings still ongoing
- New dual-hall spectrometer support group
- Engineering and technical staff remain Hall-specific

- *Questions?*