

Hall A Status Update

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Hall A Collaboration Meeting
December 2012

Accelerator schedule excerpts (Arne Freyberger)

- Accelerator Run II: Beam in hall 3/2014, or maybe as early as 2/2014 (!)
 - > 1.1 GeV/pass, 3 pass spin-up to Hall A
 - up to 5.5 pass to D by ~5/14
 - Shut down 5/3/14
- Accelerator Run III: 8/30/14 – 12/1/14
 - CD4A milestones - *not rebaselined*
 - 12 GeV 5.5 pass capable *installed*
 - 11 GeV 5 pass to A, B, C *installed*
 - > 2 nA 2.2 GeV **single pass transported**
 - Plan
 - E > 2 GeV/pass, 10 GeV to Hall D
 - 2 Hall operation
- Accelerator Run IV: 2/13/15 – 6/1/15
 - E > 2 GeV/pass, 2 hall operation
 - CD4B Halls B,C,D operational, > 6, 6, 10 GeV
 - *Schedule rebaseline likely* – won't effect Hall A or accelerator
- Physics Run I: 8/30/15 – 12/23/15
 - E > 2 GeV/pass
- Physics Run II: 2/6/16 – 6/25/16
- Physics Run III: 9/12/16 – 12/22/16
- Spring, fall, spring, fall runs continue....

(from RE) Early Beam Guidance in PAC Days

Fold in planning of beam development by Accelerator/OPS – see A. Freyberger talk

The table is split in years, but the exact correlation with FY or CY may shift. Treat the entries simply as one-year blocks to give some guidance on the best expectations for startup.

32 weeks of operations ~ 80 PAC days/Hall (for Hall multiplicity of 3)

YEAR	Hall A	Hall D	Hall B	Hall C
-1	25 (15)*			
0	60 (<10)*	25		
1	90	90	25	25
2	80	80	80	80
3	80	80	80	80

* PAC days between parentheses indicate possible choice of energies < 2 GeV/pass

(While 12 GeV machine development is ongoing, we assumed a conversion of actual days to PAC days of less than 50%)

Accelerator schedule – first considerations for Hall A

- Accelerator Run II: 3 (or 2!!)/2014 – 5/3/14
 - Beam energy may be increasing, tune will likely not be beautiful to start
 - Need to demonstrate/test/measure beam energy, polarization, position, angle on target, current, spot size, raster
 - Detector and DAQ checkout – HRS's a priority
 - Won't have beam constantly, accelerator work is priority
 - Try to run for physics anyway! ☺
 - Should be ready with experiment on the floor
- Accelerator Run III: 8/30/14 – 12/1/14
 - Beamline and tune should be OK
 - 11 GeV (or close-ish) - physics should really begin
- Assume these two accelerator runs will have to be combined
 - Starting “simple”
 - Use HRS's, hydrogen target
 - Likely enough work to do and problems to diagnose with the new beam line, tune, and instrumentation: Work with the known to troubleshoot the unknown
 - Flexible experiment(s) that can use both low and high E beams
 - Experienced collaboration(s)
 - Difficult requirements on the beam may not be met, and accelerator will not be giving priority to trying

Hall A Projected Experiment Schedule as of 8/2012

	February - May	August - December	February - June	August - December	February - June	September - December
2014	GMp / DVCS - I	GMp / DVCS - I				
2015			$^3\text{H}/^3\text{He}$ (A_1^n)	PREX (APEX)		
2016					A_1^n (SBS) (DVCS-II) (APEX)	SBS (A_1^n) (DVCS-II) (APEX)

Experiments in parentheses represent potential schedule changes.

available on Hall A wiki

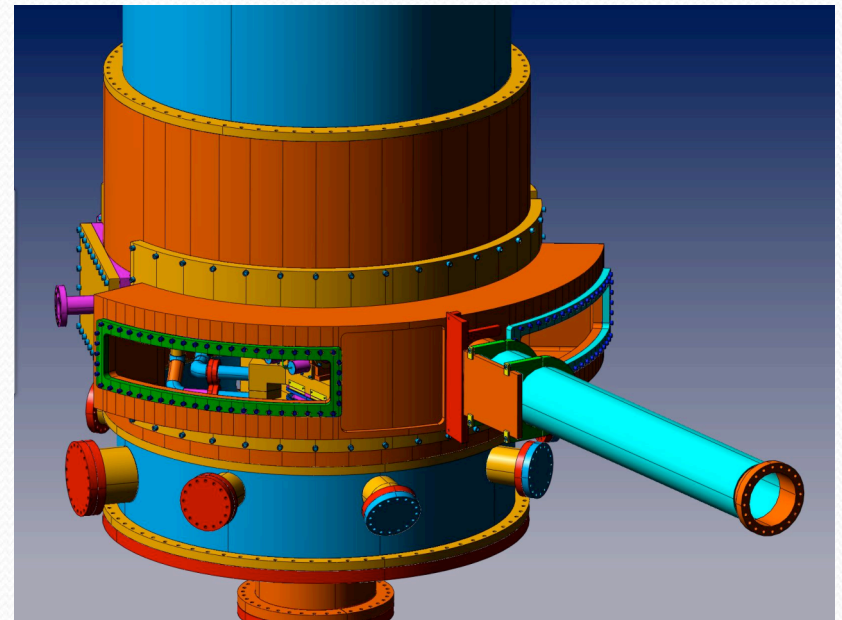
SBS



MOLLER,
SOLID...?.....

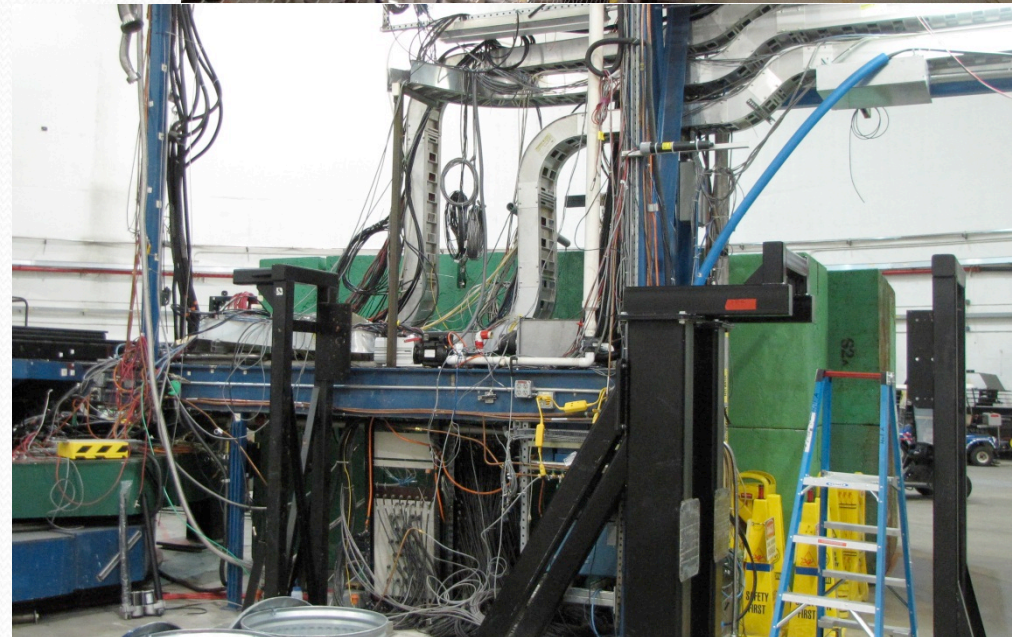
G_M^p / DVCS-I* Combined Run

- G_M^p largely backward angle, high Q^2 : HRS-R
 - May need some early, short running at forward angle, lower Q^2
- DVCS entirely forward angle: HRS-L + calorimeter
 - Plan to put calorimeter on the floor summer 2014 (between Accel. Runs II, III)
- Small differences in proposed target length, current
 - Agreed now on 15 cm target
 - Current can be accommodated by run time – which will be dominated by accelerator performance anyway
- With appropriate target chamber/extension design, calorimeter stand modifications, can achieve symbiosis – 2 for 1! ☺
 - ✓ Working on this
- *For DVCS anticipate a two run approach (100 days approved), so long as full x_{Bj} run(s) obtained



Hall Upgrade Status and Near-Term Plans

- 12 GeV Upgrade (Beamline)
 - Compton Polarimeter
 - Moller Polarimeter
 - BCMs, BPMs, Unser
 - Raster
 - Arc Energy
- Cryotarget Upgrade
 - + Swing Arm for Optics Centering
- First Experiments
 - Scattering Chamber + Extension
 - Calorimeter Shielding
 - Calorimeter Stand
 - Cables on the floor?
- TED-F space for Calorimeter testing (Orsay, ODU,...)
-more..... ->



HRS Tasks (MIT, Yerevan, CMU....) - *want to help?*

- VDCs - need 3-4 FTE-month in electronics than 1 FTE-month for software/analysis
- Shower - need 1 FTE-month in electronics than 1 FTE-month for test/analysis
- So - need 0.5 FTE-month for installation/tests
- S2m - need 1 FTE-month for electronics - high resolution TDC (in DVCS)
- Gas Cherenkov - 2-3 FTE-month for mirror test/installation, PMT tests
- Online analysis GUI - 2-3 FTE-month
- HV system with units and crates - 2-3 FTE-month
- Trigger with EDTM - 1 FTE-month
- Beam information in the HRS DAQ - 1 FTE-month
- FPP chamber electronics re-installation - 3 FTE-month

Running HRS-L
CODA₃ for cosmics,
Compton DAQ test
stand achieved
~1MHz

Other Tasks for First Running

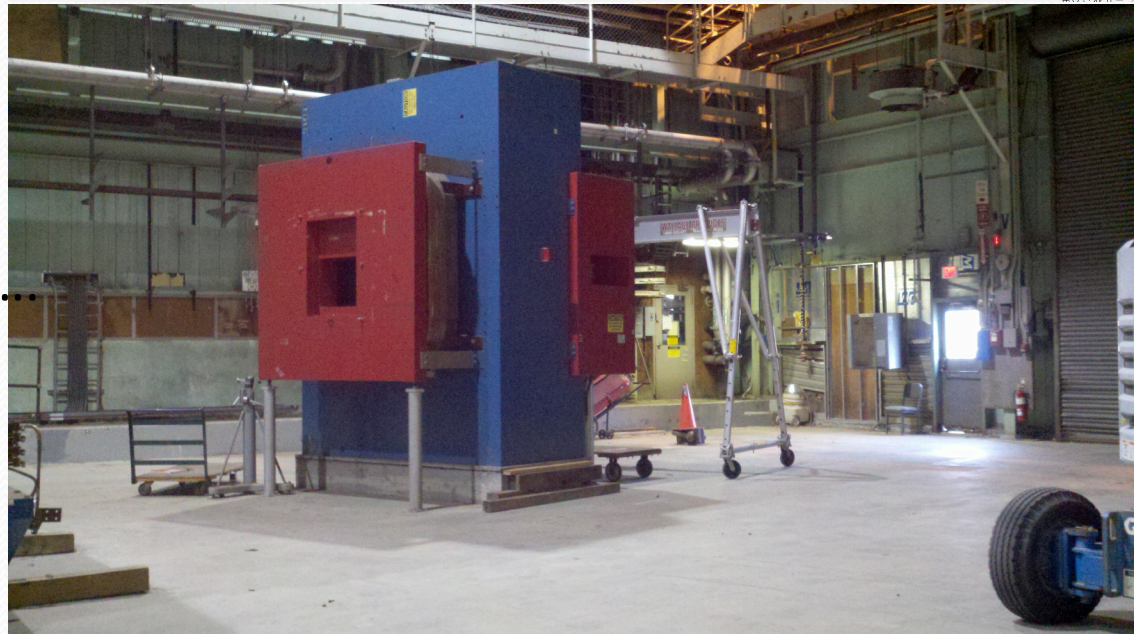
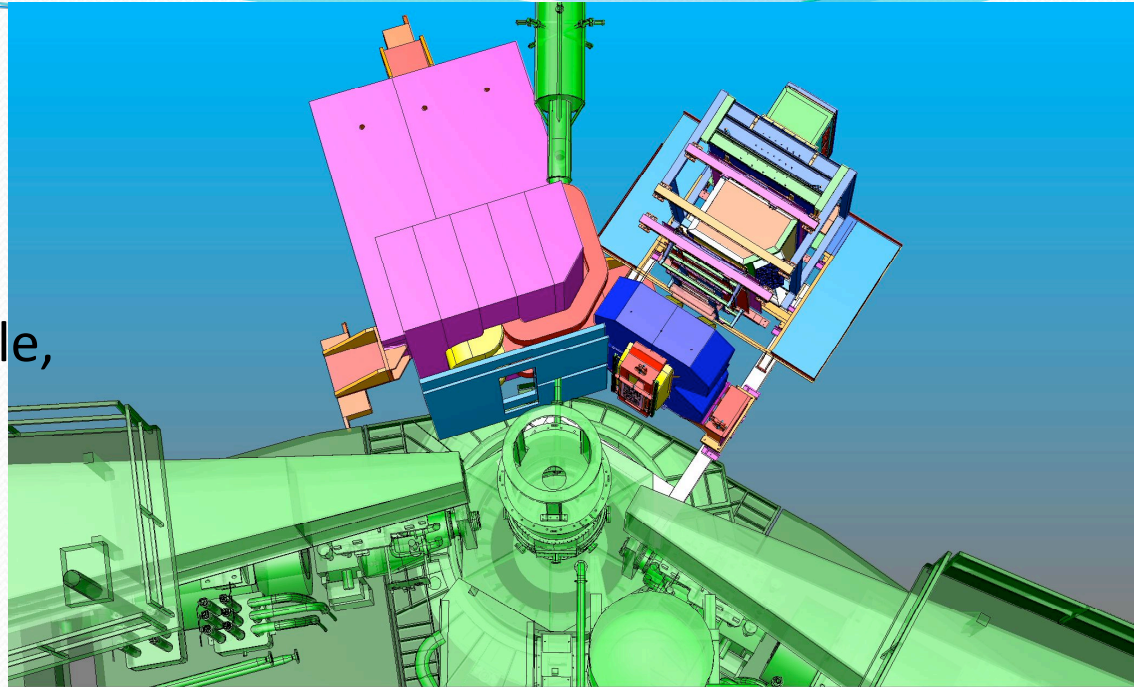
- A new experiment readiness review process - need to begin sooooooon!
- Beam energy measurement(s) - Arc, (e,e'p), nuclear elastic,...
- Polarimetry
 - Compton (e- and γ), Manitoba, CMU, UVA, MSU, Idaho...
 - Moller (Kharkov, RPI...)
- Beam charge calibrations - new Unser?
- Beam position
- Target boiling (new raster)
- Spectrometer motion, optics
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....and Preparations for Second Run group (pre-SBS)

- A new experiment readiness review process - ^3H experiments need to begin sooooooon! (Patrizia's talk)
- Need user support to get BigBite back together again
 - New Cerenkov
 - Reassemble and test the electronics/detectors/DAQ (test lab)
- Need help with polarized ^3He target
 - Now a combined Hall A/C target(s)
 - Would like 1-2 PhD students working on the target at JLab.
 - UVA R&D

SBS

- DOE approved, project started in October
 - ^3He , Bigbite (W&M, Temple, Kent,...)
 - Magnet, supports at Jlab
 - GEMs at INFN, UVA
 - Coordinate detector (SMU,...)
 - Hadron calorimeter (Glasgow,...)
 - DAQ/tracking/electronics....
- Regular weekly meetings (UVA, CMU, Glasgow, St. Mary's, W&M, UMass, NSU....)



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- MOLLER
 - SoLID project has a lot of active user groups, but still in need of expanded user participation - large project!
 - DAQ system
 - EM calorimeter
 - Magnet and software
 - Many sub-projects are excellent opportunities for postdocs
 - Collaboration meeting Friday, Saturday!
 - Although likely farther in the future, there's work to do now! (another reason for starting simple)

Some final thoughts....

- New proposals!!
 - PAC 40 will be in June, with May deadline - expect formal announcement soon
 - Hall A will have beam time starting in the nearish future, and is not severely backlogged.....yet....
 - Theory talks at this meeting
- Exciting times – *12 GeV beam is on the way!*