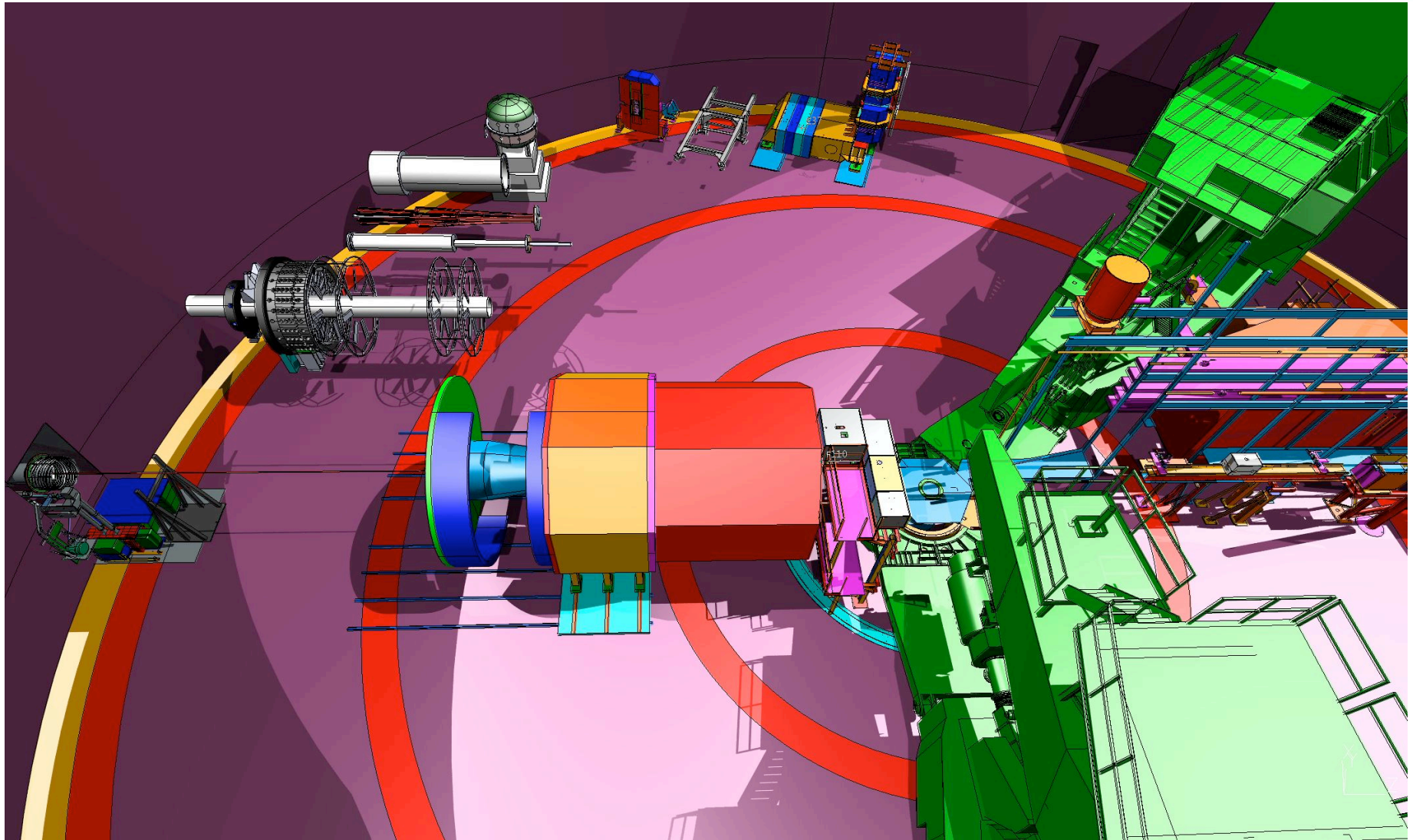




Hall A Update

Thia Keppel

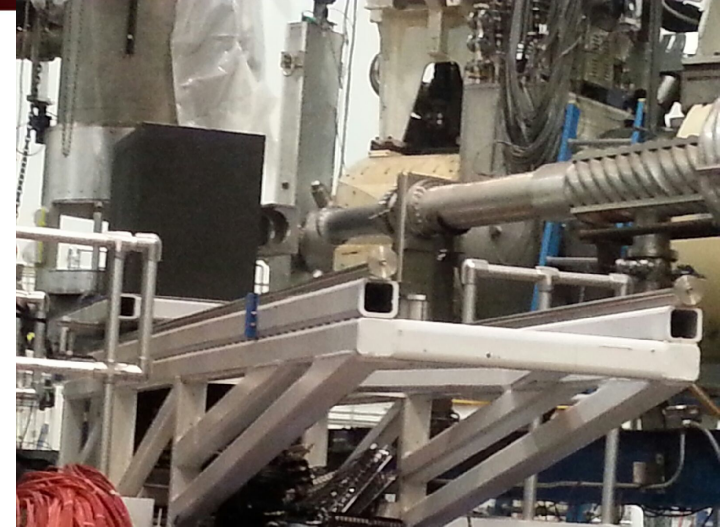


SoLID Collaboration Meeting
September 2015

Jefferson Lab
Thomas Jefferson National Accelerator Facility

Current Status and Near Term Planning

- DVCS/GMp Experiments on floor, ready to run
- Plan to lock-up hall ~November
 - No change until (maybe) Summer 2016
 - Spring for Physics!
 - Fall for beamline and parity instrumentation/beam checkout



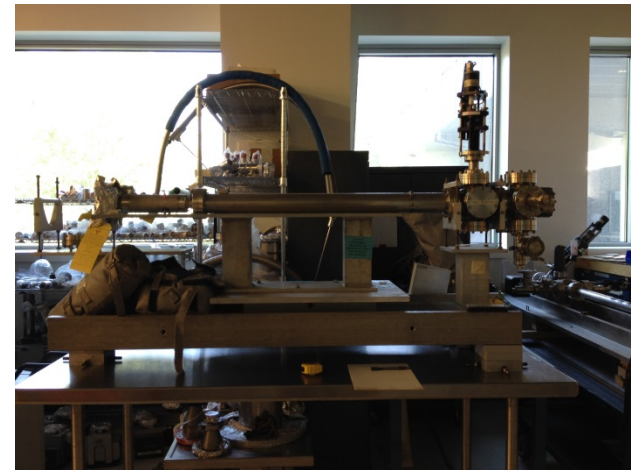
- HRS-R Q1 repair
 - New leads on site
- New harp electronics and readout to be consistent with accelerator
 - improved repair and maintenance
 - translates to new software for arc beam energy measurement
- Superconducting Moller development
 - New magnet here! →
 - Target from Temple
- Compton polarimeter
- Removed Ag calorimeter
- Cryo controls upgrade
- Add additional parity instrumentation to beam line






Precision Beamline Instrumentation

- Parity quality beam working group formed (JLab physics and accelerator, VaTech, UVa)
- Hall A beam modulation system
 - Air core coils in multiple positions along the beam line, verifying electronics
- 2 “XYQ” (Q_{weak}) cavities recently installed near the target, equipped with new electronics and temperature controls.
- Imported Q_{weak} halo monitor
- New cabling to counting house
- Hoping to test starting Fall 2015



	Spring	Fall	Spring	Fall	Spring	Fall
CY 2015	DVCS - I/ GMp					
CY 2016			DVCS -I/ GMp	$^3\text{H}/^3\text{He}$ group		
CY 2017					$^3\text{H}/^3\text{He}$ group	<i>APEX</i> <i>PREX12</i> <i>CREX</i> A_1^n <i>Ar(e,e'p)</i> <i>DVCS-II</i>

CY 2018

SBS start? (5 expts)

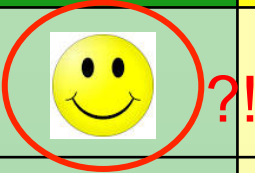
—————→ **MOLLER, SoLID??**

- Experiments listed in italics represent potential schedule options, in no order
- Red indicates PAC41 High Impact Experiments including SBS G_e^p



Hall A Projected Experiment Schedule, updated 2/2015

- available on Hall A wiki

	Spring	Fall	Spring	Fall	Spring	Fall
CY 2015	DVCS - I/ GMp					
CY 2016			DVCS -I/ GMp	$^3\text{H}/^3\text{He}$ group		
CY 2017					$^3\text{H}/^3\text{He}$ group	<i>APEX</i> <i>PREX12</i> <i>CREX</i> A_1^n <i>Ar(e, e'p)</i> <i>DVCS-II</i>

CY 2018

SBS start? (5 expts)
MOLLER, SoLID??

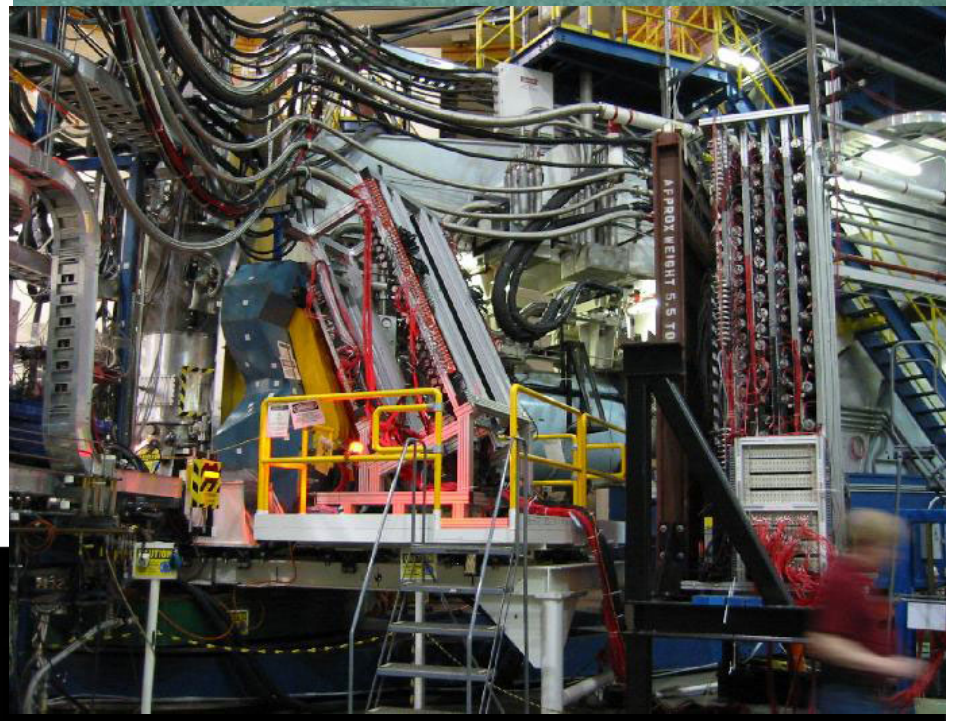
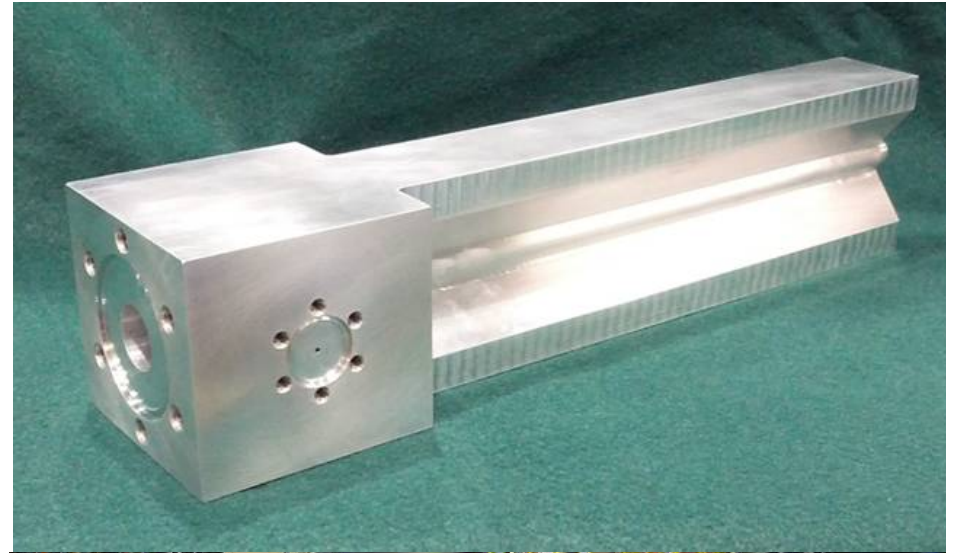
- Experiments listed in italics represent potential schedule options, *in no order*
- Red indicates PAC41 High Impact Experiments including SBS G_e^p



Tritium Experiment Preparations

- Four experiments
- Preparing “tritium family” for common run period
- Preparing for (target) safety/design review September 15
- BigBite under (re-)construction in test lab
 - Active collaboration, 8 students on site
 - Design for modified Cerenkov
 - Plan to add SBS GEM planes

There's a lot more going on, but let's jump to.....

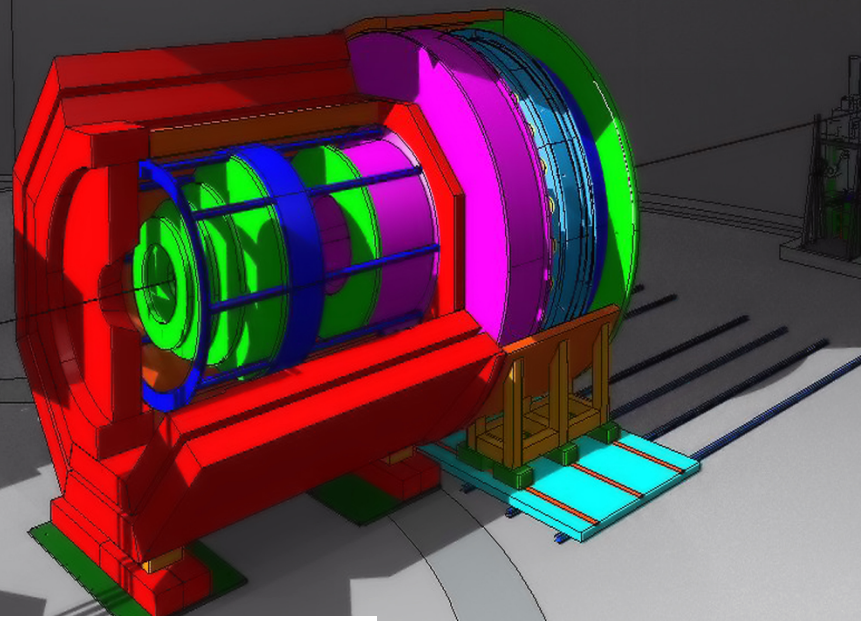


SoLID

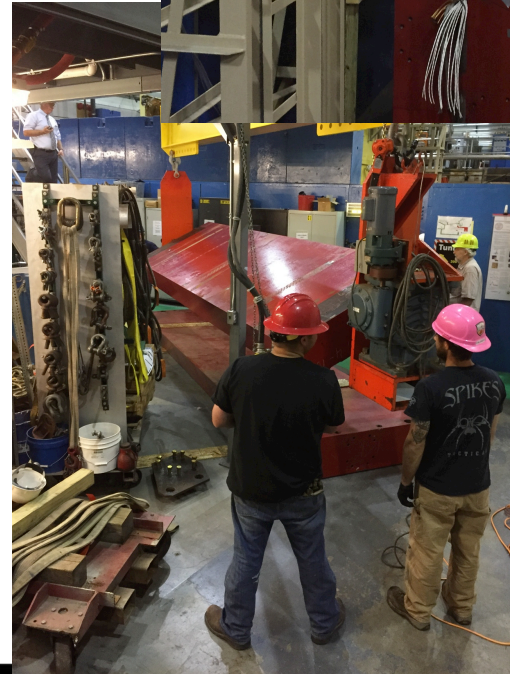
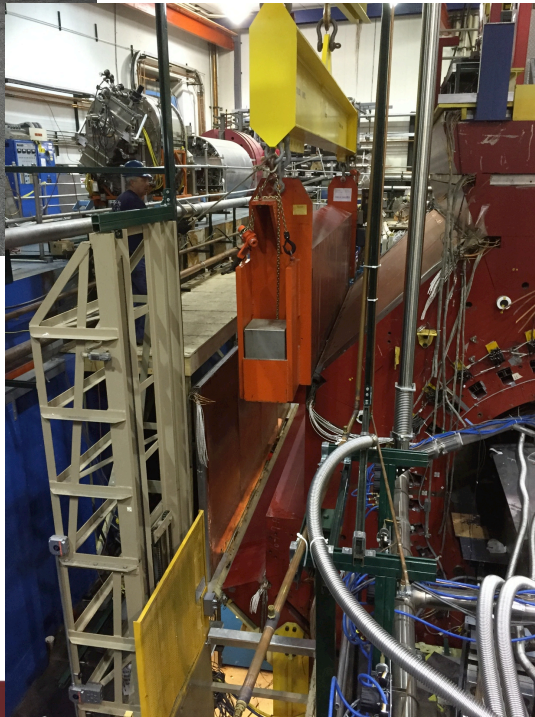
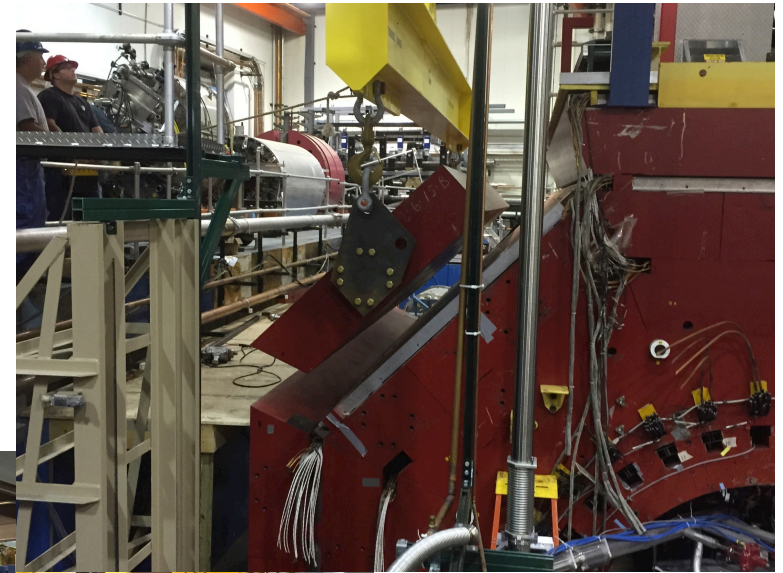
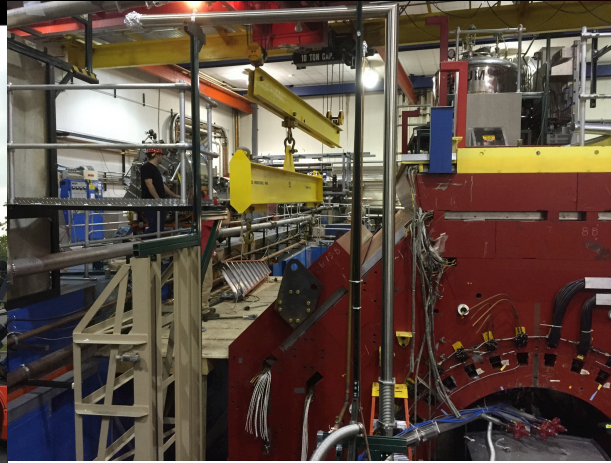
- Work at Cornell to disassemble CLEO-II magnet began late summer 2015
- JLab plans to observe disassembly procedure periodically
- Preparing for delivery/storage at JLab



CLEO-II at Cornell



SoLID at Jlab

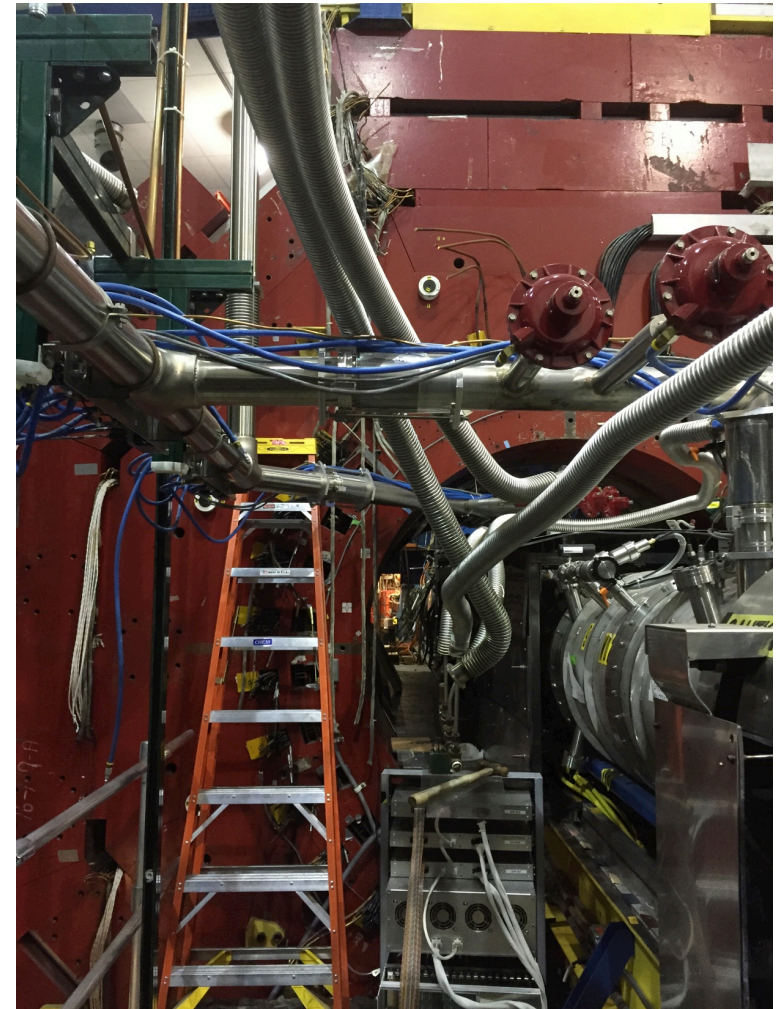


See
Whit's
talk!

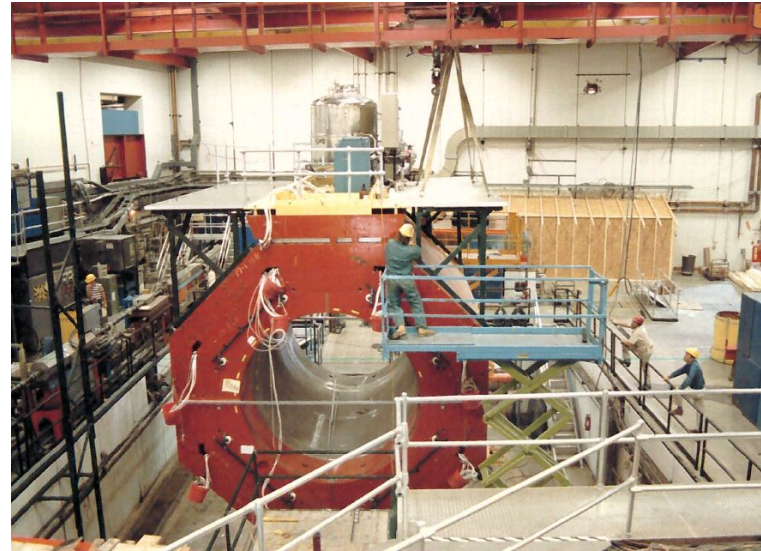
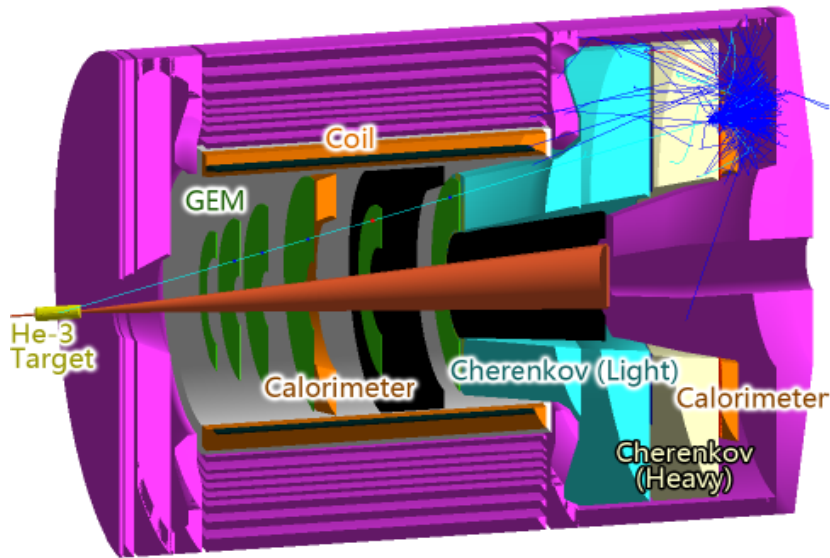
SoLID – Hall A Efforts

- Parity beamline development
- Improved polarimetry
- Disassembly/re-assembly of CLEO-II
- “Formally” engaged Graham H. and Steve W. to look at DAQ and trigger needs for CDR
- ^3He target development
- Continue to consider in infrastructure and other planning

- DOE Laboratory S&T Review



SoLID Experiment *(presented at JLab S&T Review)*



**Uniquely leverages high luminosity *PLUS* large acceptance capabilities at JLab
International collaboration**

- 8 countries, 50+ institutes and 190+ collaborators)

Chinese collaborators playing a major role

- 2 grants from NSFC (~\$1M), + R&D funding (~\$1M) for 7 groups working on GEMs, MRPC and ECal detectors



Summary *(presented at JLab S&T Review)*

SBS, MOLLER, and SoLID enhance the JLab 12 GeV facilities and enable continued, high impact science from JLab into the future

SBS: optimized for nucleon form factors

MOLLER: unprecedented test of the standard model

SoLID: unique science at high luminosity and large acceptance

SBS

- On track for successful (third) DOE annual review in November 2015

MOLLER

- Successful Science Review September 2014
- Moving towards Director's Cost, Schedule, and Technical Feasibility Review and subsequent DOE Technical Feasibility Review

SoLID

- Director's Review Fall FY2014
- Working on finalizing pre-CDR

Where to go from Director's Review? *(slide used last meeting)*

- Revise proposal to address recommendations, comments,..
 - Need a “to do” list with names
 - Timing of revised proposal completion is up to the collaboration
- Create a concise tracking document for the above to note where/how/if each review point was addressed
 - Should be brief and refer to proposal, not a review response document!
 - Also suggest documenting any other changes to proposal, could be same or additional (brief!) document
- Beyond the technical, need to better elucidate and strengthen physics case
 - Create “banner plots”

Strengthening the Physics Case *(slide used last meeting)*

- Unique, A+ measurements are **essential** for such a large funding request.
- An expensive device for a "multi-purpose" program should be a strong argument, but need to both
 - elucidate this, and
 - underscore it with some *unique* science
- Create plot to make *quantitatively* very clear that the polarized ^3He SIDIS program will be the best worldwide program for neutron SIDIS measurements
- PVDIS unique and high priority
 - Put together a bullet-proof defense of the PVDIS program (technical and interpretational)
 - d/u case will diminish with collider data, MARATHON, BONUS12,... all coming in the next ~5ish year pipeline. CSV?
 - Be ready to quantitatively answer how much better SoLID does than something like a three year run with HMS-SHMS?
- GPD case suggested by committee
 - $e+p \rightarrow e+p+(e+e^-)$ was mentioned as reaction which is effectively inaccessible in CLAS12
 - Be ready to compare to CLAS12 with an upgrade to a luminosity of 10^{36} (apparently not impossible on the timeframe of SoLID)
 - Exclusive measurements with the mediocre resolution of a solenoid may make GPD's a challenge

Thank you!

