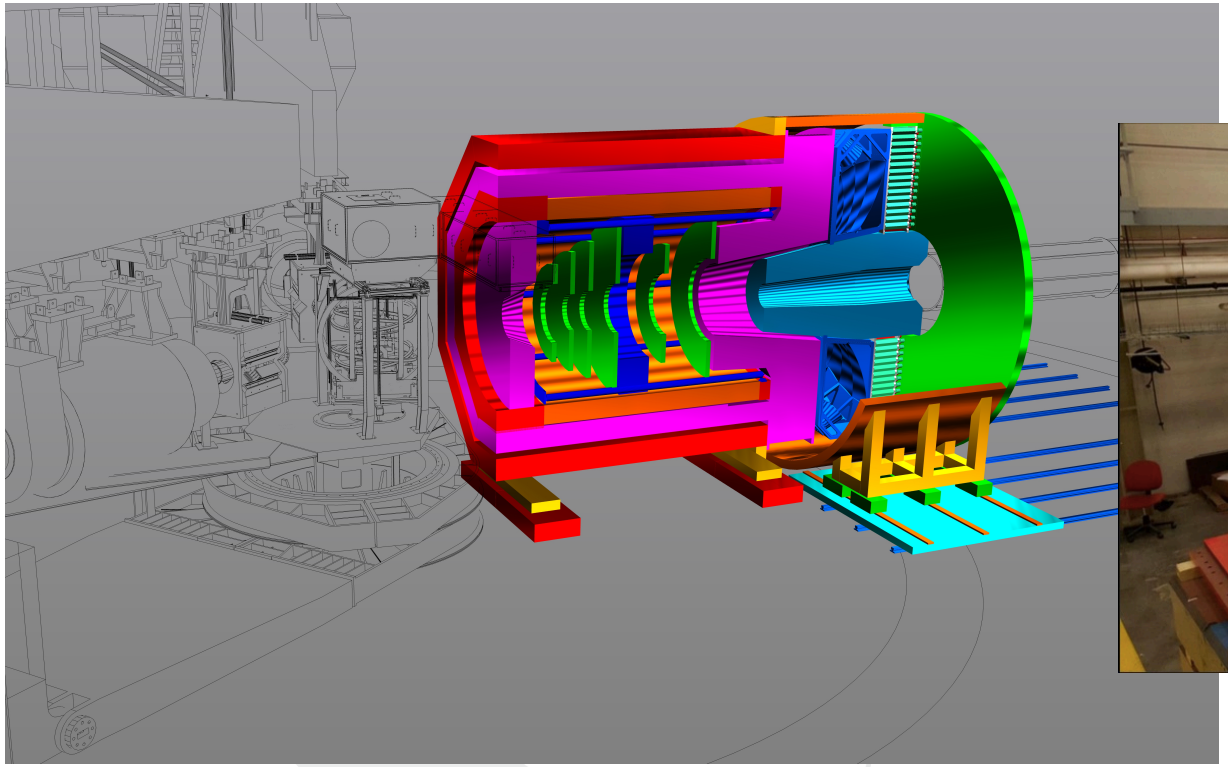
# Input from Hall A

SoLID Collaboration Meeting
Jefferson Lab - January 10-11, 2019

Thia Keppel



# E12-06-114 DVCS – first JLab Experiment at 11 GeV

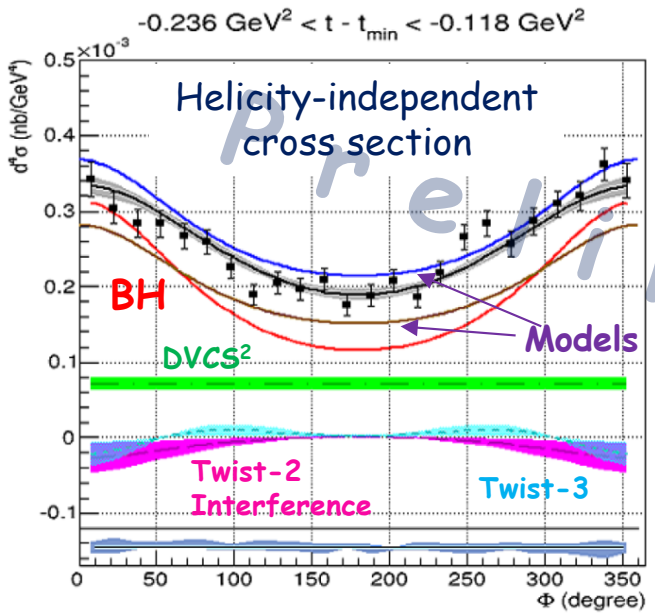
100 PAC days approved:

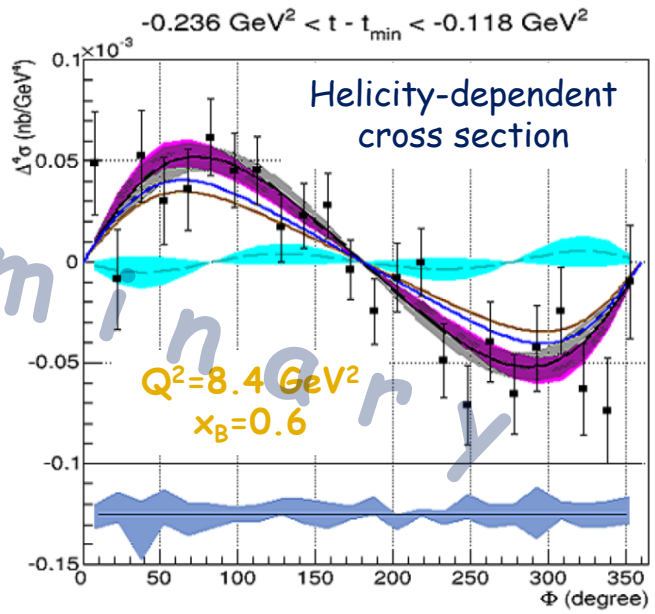
**- High impact experiment for nucleon 3D imaging program**

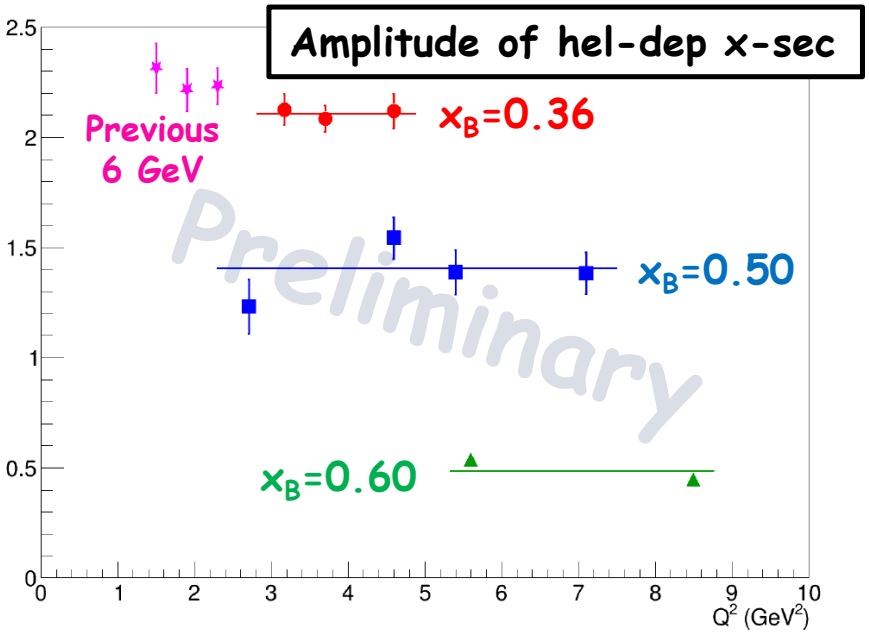
- High precision scaling tests of DVCS cross section at fixed $x_B$

- CEBAF12 allows to explore for the first time the high $x_B$ region

50% of experiment planned & completed in 2014-2016




## Analysis status:

- Preliminary DVCS cross sections available for *all 9 kinematic settings* (and presented at SPIN 2018)
- Systematic studies being finalized
- **Publication to be submitted before Summer'19**
- $\pi^0$ electroproduction results and publication will follow soon afterwards

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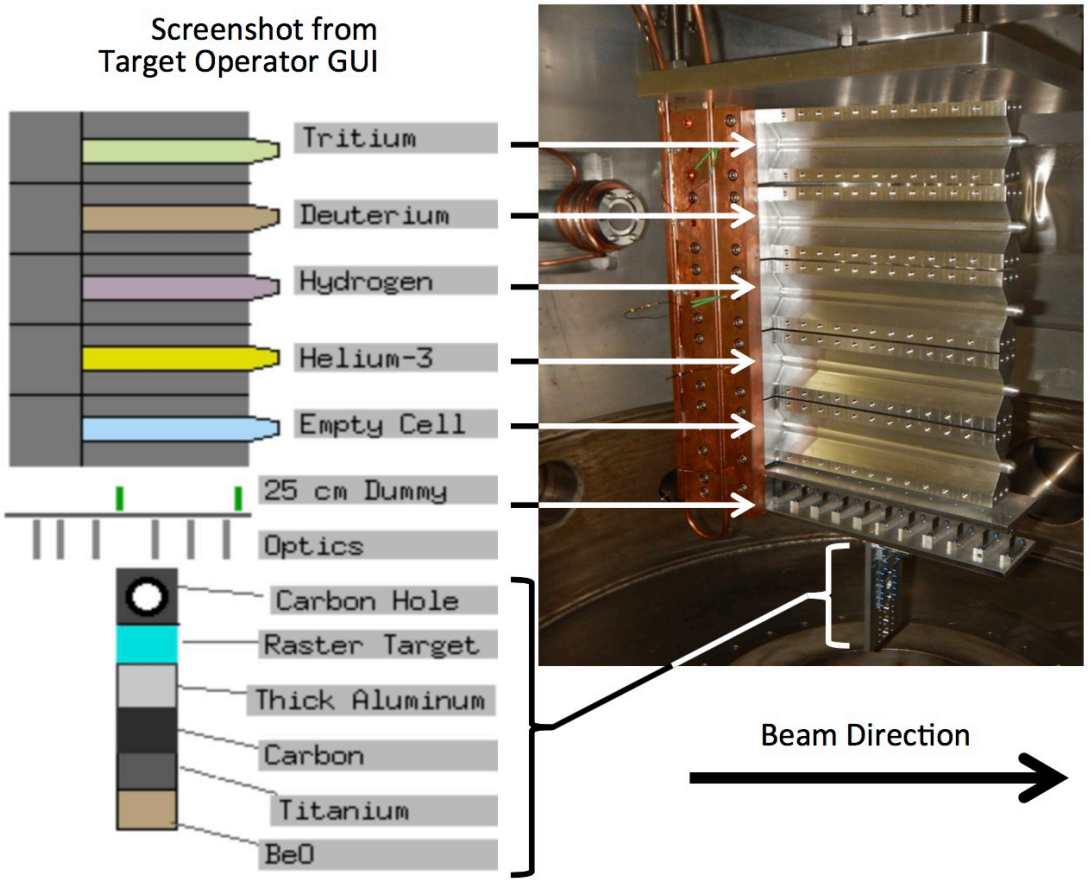
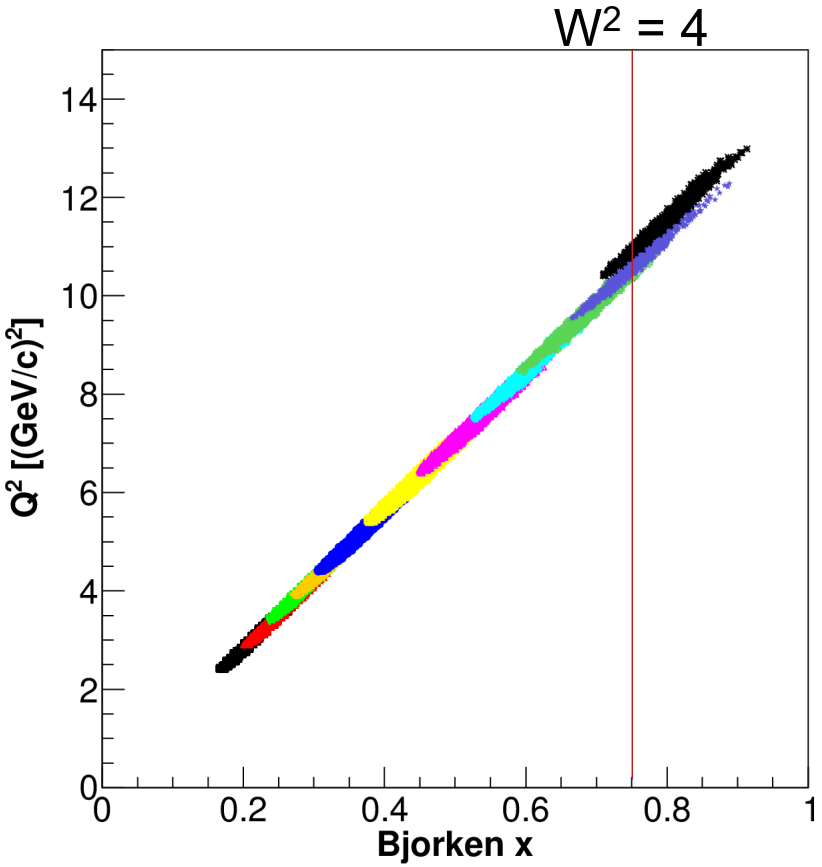
# FIRST USE OF $^3$H TARGET AT ELECTRON LAB IN 3 DECADES




- Running tritium family of experiments in 2017/2018 – **4 completed including MARATHON 3H/3He, SRC (2), ΛNN bound state**
- SRC (e,e'p) results first publication underway – next slide
- Expect first MARATHON results to be from direct nuclear ratios: D/p, $^3$H/$^3$He, $^3$H/d,…



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# HALL A TRITIUM (and Argon) RUNNING COMPLETED

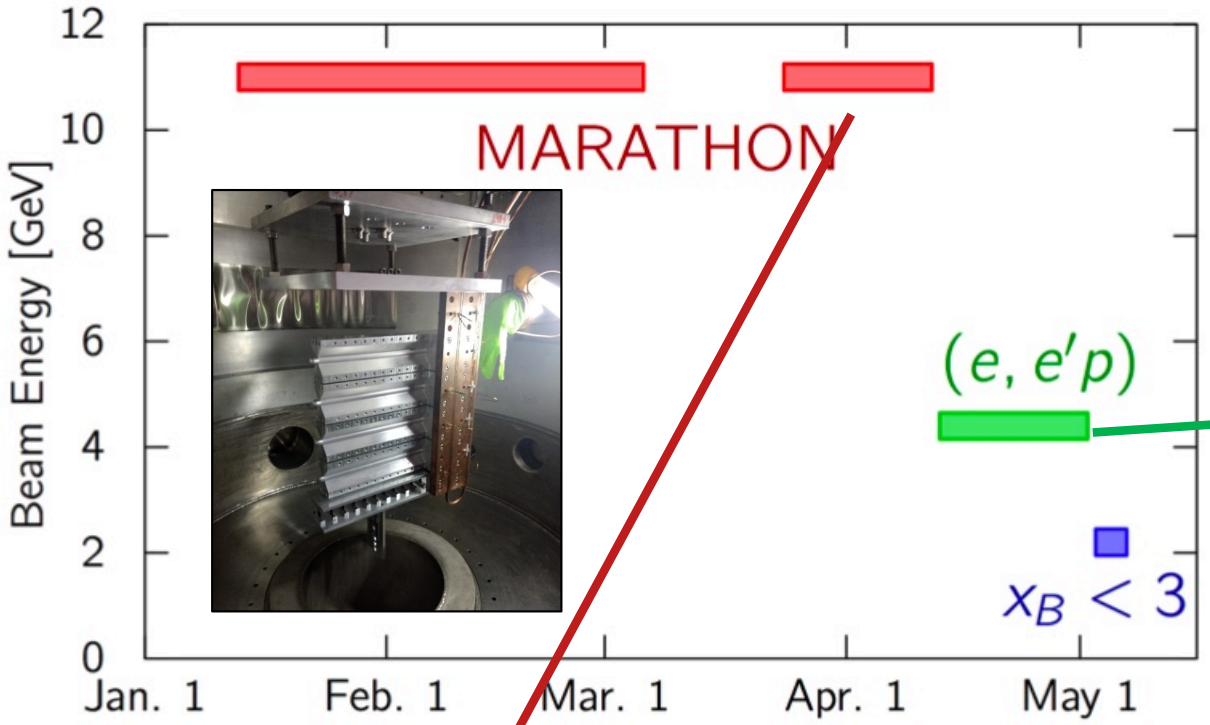
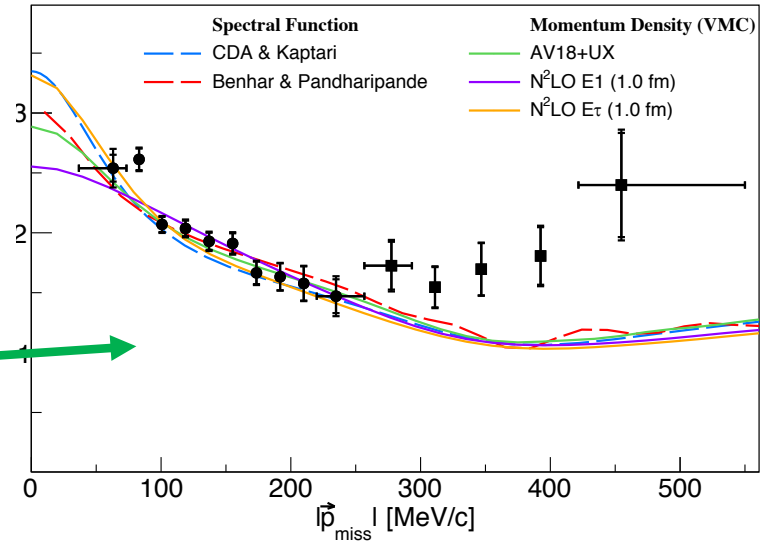
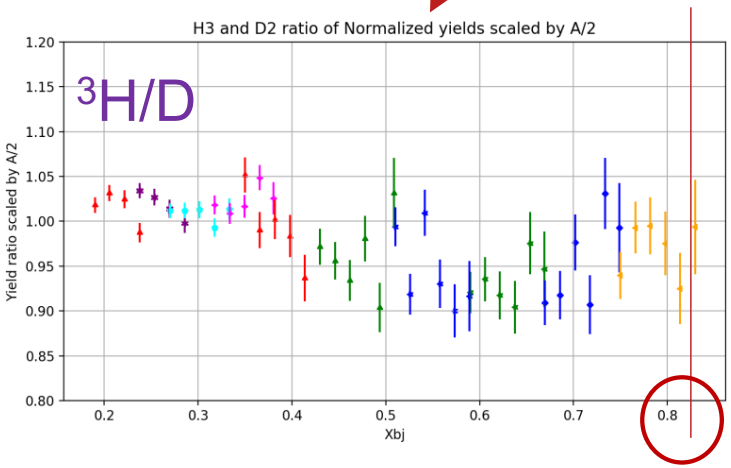



Figure by A.Schmidt

Draft publication submitted to collaboration




Plot from R. Cruz Torres




MARATHON *prelimary* results from J. Bane

JLAB-PHY-18-2656
SLAC-PUB-17200

**First Measurement of the Ti$(e, e')$X Cross Section at Jefferson Lab**

H. Dai,[1] M. Murphy,[1] V. Pandey,[1,*] D. Abrams,[2] D. Nguyen,[2] B. Aljawrneh,[3] S. Alsalmi,[4] A. M. Ankowski,[1,5,†] J. Bane,[6] S. Barcus,[7] O. Benhar,[8] V. Bellini,[9] J. Bericic,[10] D. Biswas,[11] A. Camsonne,[10] J. Castellanos,[12] J.-P. Chen,[10] M. E. Christy,[11] K. Craycraft,[6] R. Cruz-Torres,[13] D. Day,[2] S.-C. Dusa,[10] E. Fuchey,[14] T. Gautam,[11] C. Giusti,[15] J. Gomez,[10] C. Gu,[2] T. Hague,[4] J.-O. Hansen,[10] F. Hauenstein,[16] D. W. Higinbotham,[10] C. Hyde,[16] C. M. Jen,[1] C. Keppel,[10] S. Li,[17] R. Lindgren,[18] H. Liu,[19] C. Mariani,[1] R. E. McClellan,[10] D. Meekins,[10] R. Michaels,[10] M. Mihovilovic,[20] M. Nycz,[4] L. Ou,[13] B. Pandey,[11] K. Park,[10] G. Perera,[18] A.J.R. Puckett,[14] S. Širca,[21,20] T. Su,[4] L. Tang,[11] Y. Tian,[22] N. Ton,[18] B. Wojtsekhowski,[10] S. Wood,[10] Z. Ye,[23] and J. Zhang[18]
(The Jefferson Lab Hall A Collaboration)

Phys. Rev. C 98 (2018) no.1, 014617



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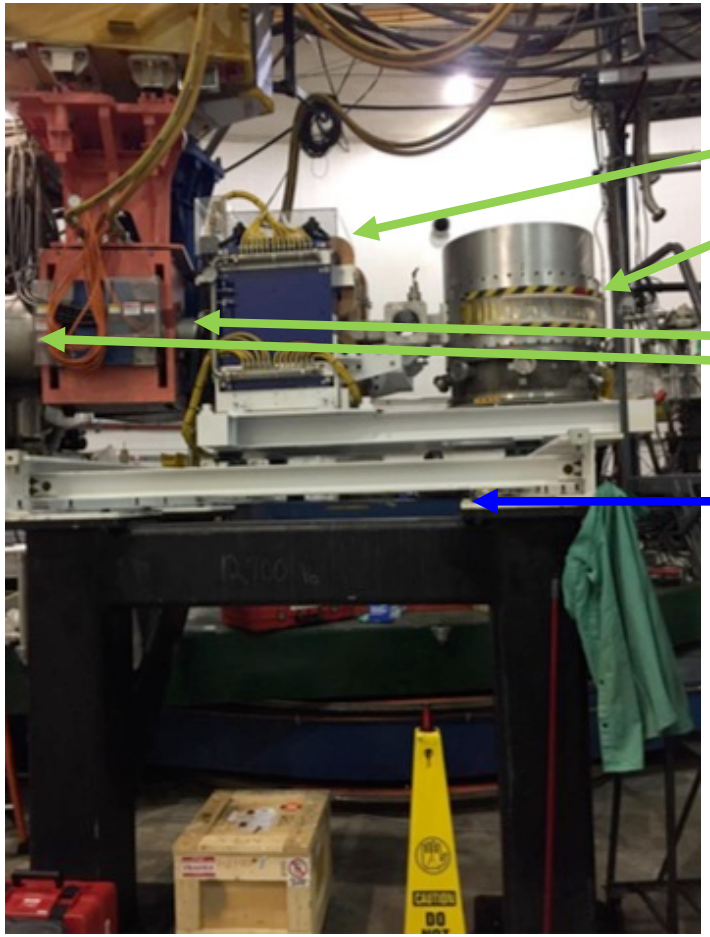
# APEX (AND PREX2/CREX) INSTALLATION UNDERWAY

November 26, $^{3}H$ program completed – tritium target on pivot

Tritium de-installation, pivot area clear

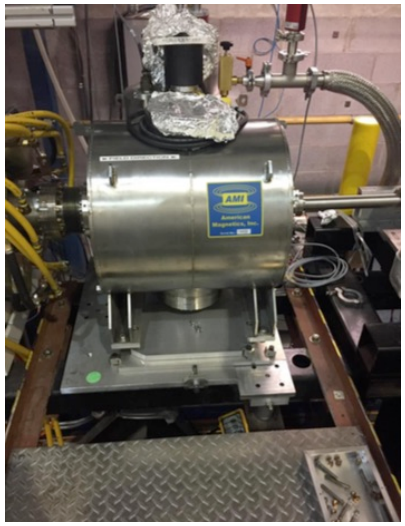


Pivot area 1/8/19

*Installed:*

- APEX septum
- APEX target chamber
- APEX corrector magnets

*Designed for common installation components with PREX2/CREX*



*Also* preparing for in-beam PREX2/CREX MOLLER and Compton polarimetry testing at end of APEX run



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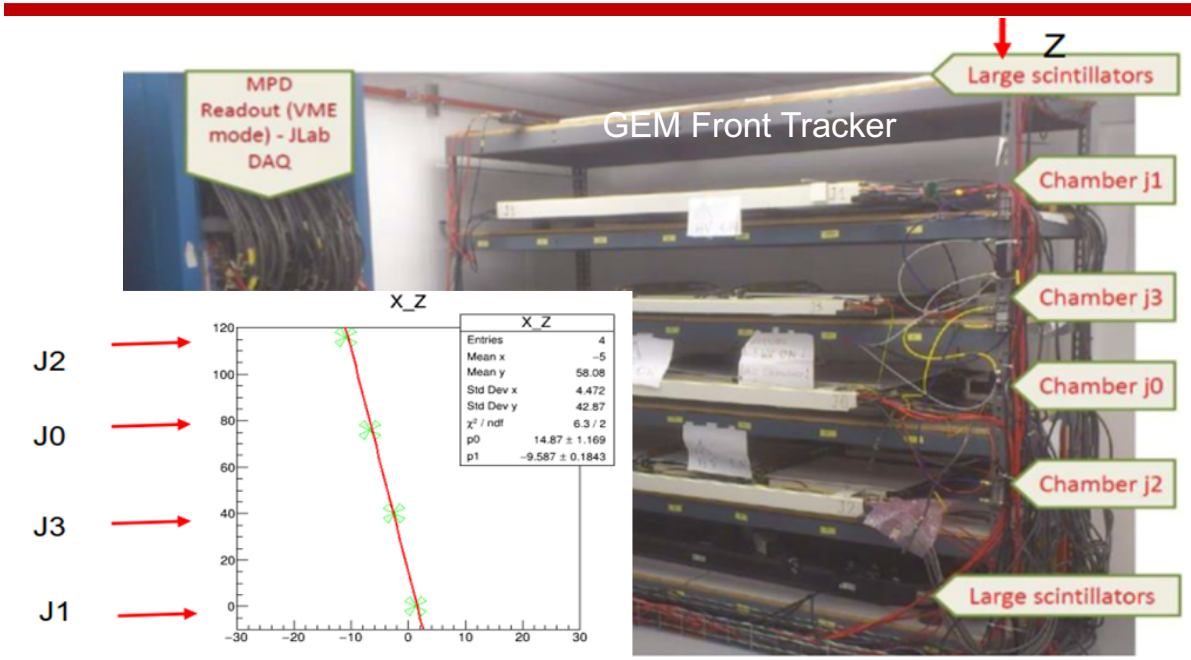
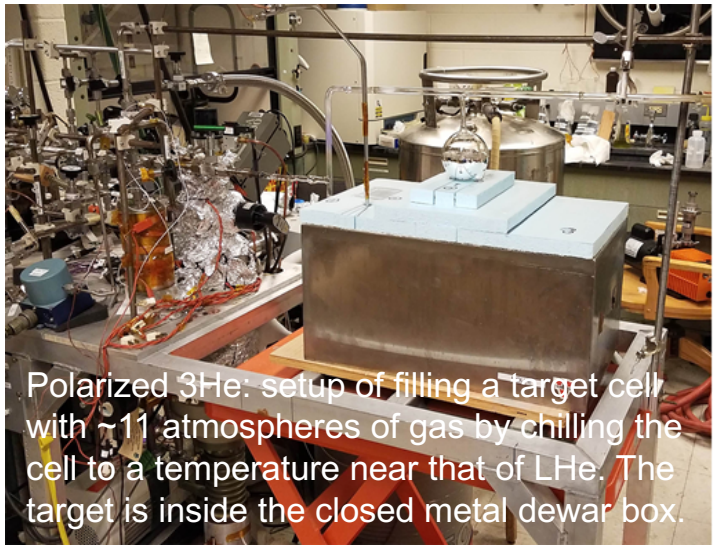
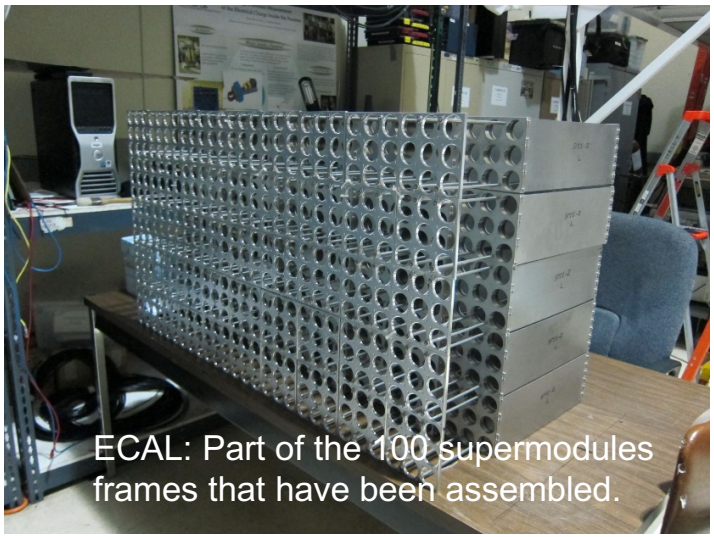
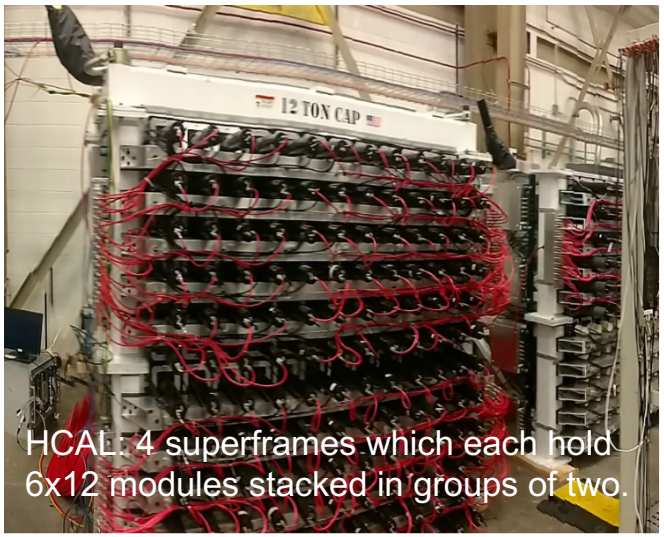
# MAJOR SBS COMPONENTS INCLUDING DEPENDENCIES AT JLAB, UNDERGOING FINAL TESTING, LOOKING TO RUN AFTER PREX2/CREX





Polarized 3He: setup of filling a target cell with ~11 atmospheres of gas by chilling the cell to a temperature near that of LHe. The target is inside the closed metal dewar box.


ECAL: Part of the 100 supermodules frames that have been assembled.



HCAL: 4 superframes which each hold 6x12 modules stacked in groups of two.


GRINCH installed in BigBite frame

5-12/2020 JLab Down for CHL2K cold box – SBS installation opportunity!



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# MOLLER PREPARATIONS RAMPING UP

Preparing for Spring 2019 Director's Review, *possible* *project start FY20*

**Change Control Board**
The Change Board consists of,
Project Manager,
Deputy Project Manager,
Project Engineer,
Safety,
Cost Account Managers (CAMs)
Executive Board (EB) chair

DOE Office of Nuclear Physics
JLab Directorate
Physics Division Associate Director *R. Ent*
Hall A Leader *C. Keppel* ↔ Collaboration

**Technical Board**
The Technical Board consists of,
Collaboration Spokesperson,
Experiment Contacts (ECs),
Project Engineer (ex officio),
Hall Leader (ex officio)

Project Office
Project Manager: *H. Fenker**
Deputy Project Manager: *J. Butler*
Project Engineer: *R. Wines*
Safety: *E. Folts*
Senior Advisor *L. Harwood*

**Spectrometer**
CAM: *R. Fair*
EC: *J. Mammei*
CS&T: *R. Wines*

**Detectors**
CAM: *C. Zorn*
- **Integrating**
  LAB: *D. Mack*
  EC: *M. Gericke*
  CS&T: *C. Zorn*
- **Tracking**
  LAB: *J. Segal*
  EC: *D. Armstrong*
  CS&T: *M. Kohl*

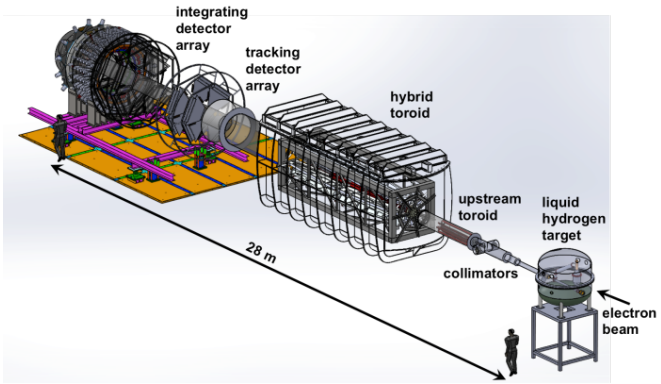
**Target**
CAM: *S. Covrig*
EC: *N/A*
CS&T: *D. Meekins*

**DAQ/Monitoring**
CAM: *R. Michaels*
- **DAQ/Oline**
  LAB: *R. Michaels*
  EC: *M. Pitt*
  CS&T: *S. Wood*
- **Beam Diag./Mon**
  LAB: *R. Carlini*
  EC: *M. Pitt*
  CS&T: *D. Higinbotham*
- **Offline**
  EC: *P. King*
  CS&T: *O. Hansen*

**Hall Infra. & Integ.**
CAM: *J.Gomez*
- **Rad. Shielding**
  LAB: *B. Wojtsekhowski*
  EC: *C. Gal*
  CS&T: *P. Degtiarenko*
- **I&I**
  LAB: *J. Gomez*
  EC: *D. McNulty*
  CS&T: *L. Harwood & E. Folts*

**Polarized Beam**
LAB: *TBD*
EC: *G. Cates*
CS&T: *J. Benesch*

**Polarimetry**
LAB: *D. Gaskell*
EC: *K. Paschke*
CS&T: *S. Malace*




Cost Account Managers (CAM), Lab. L2 (LAB), Experiment Contact (EC), Reviewer (CS&T)



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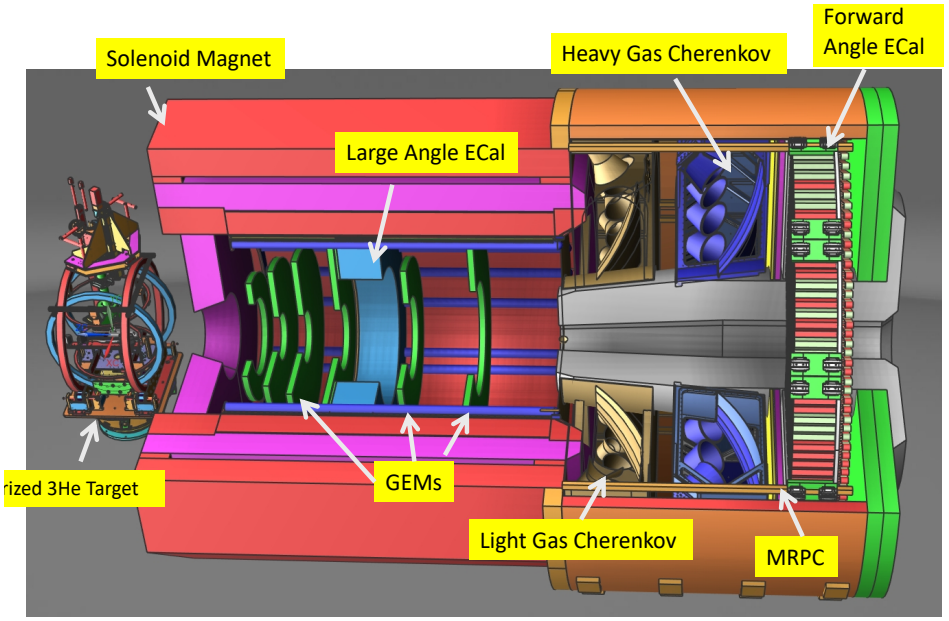
# RECENT SOLID ACTIVITIES

- Status meeting at DOE Headquarters with Office of Nuclear Physics July 13, 2018
- Revised pCDR (with updated cost estimate) submitted to JLab Director's Office December 17, 2018
  - Base equipment configuration - US request
  - Enhanced base equipment with foreign contributions
- Preparing for Director's Review early CY2019
- Anticipating Science Review to follow in CY2019




**ECal:** University of Virginia; Shandong University; Tsinghua University

**GEM:** University of Virginia; University of Science and Technology of China; Institute of Modern Physics; Lanzhou University; Tsinghua University

**MRPC:** Tsinghua University; University of Science and Technology of China

**Light Gas Cherenkov:** Argonne National Laboratory; Temple University

**Heavy Gas Cherenkov:** Duke University; University of Regina

**Magnet:** Jefferson Lab; Argonne National Laboratory

**Simulations:** Argonne National Laboratory; Duke University; Syracuse University; Stony Brook University



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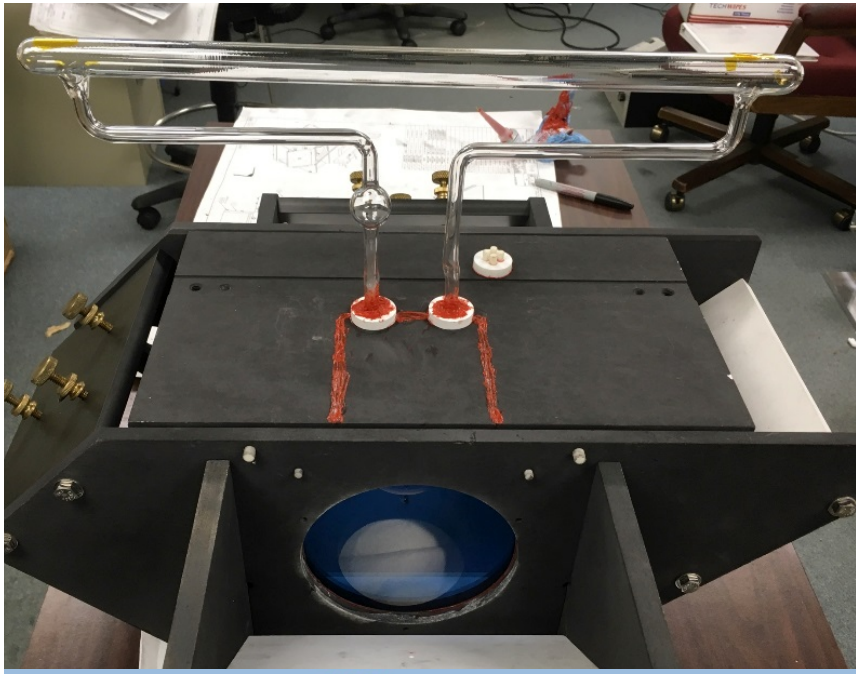
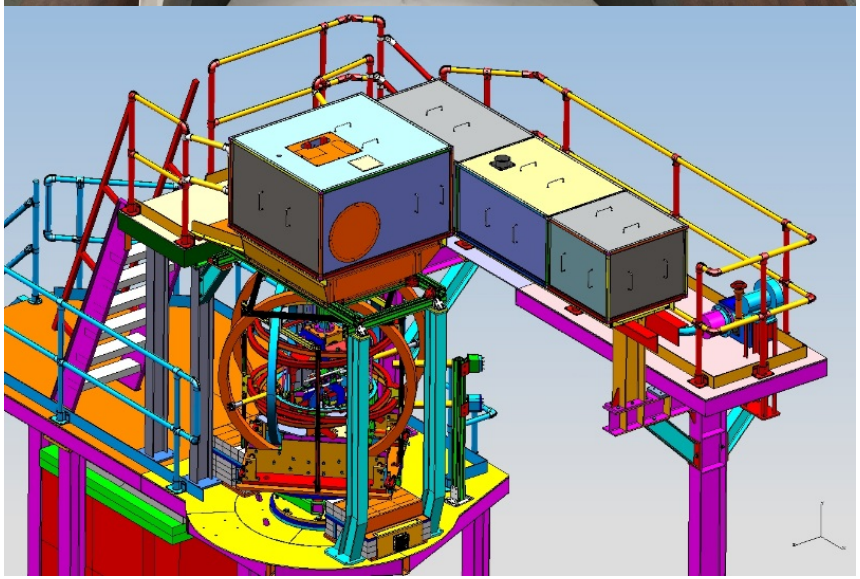
# JLAB SOLID ACTIVITIES

- Engineering and design (see Whit's talk
  - Outer steel to arrive from Cornell Summer 2019
- Magnet preparations (P. Brindza et al)
  - Looking towards cold test
  - Instrumentation and controls (reduce highest schedule risk)
- Data acquisition (see Alex's talk)
  - Also high rate GEM test stand (TDIS+, E. Jastrzembski)
- Slow controls (see Brad's talk)
- Software development (see Ole's talk)
- Polarized $^3$He target development
- Polarimetry (also for PREX2/CREX,..)
- Regular parity quality beam meetings
- Magnetic field analysis
- Project planning
  - Cost updates





# Thanks! Any questions?