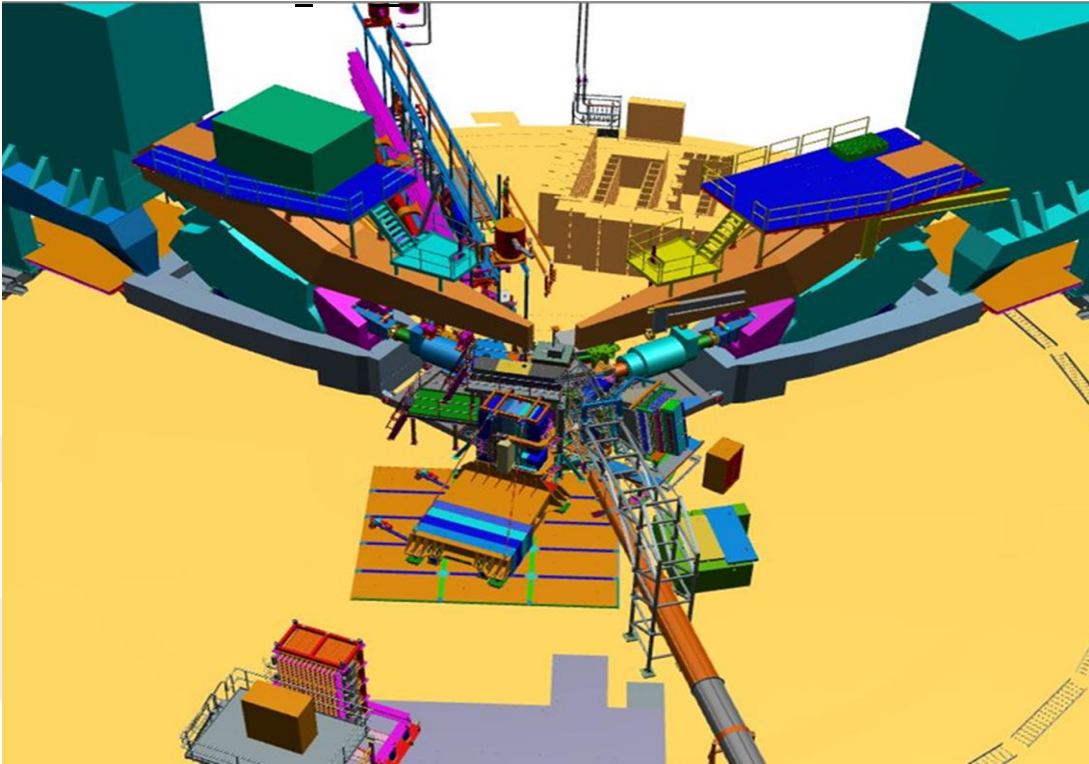


Hall A/C Status

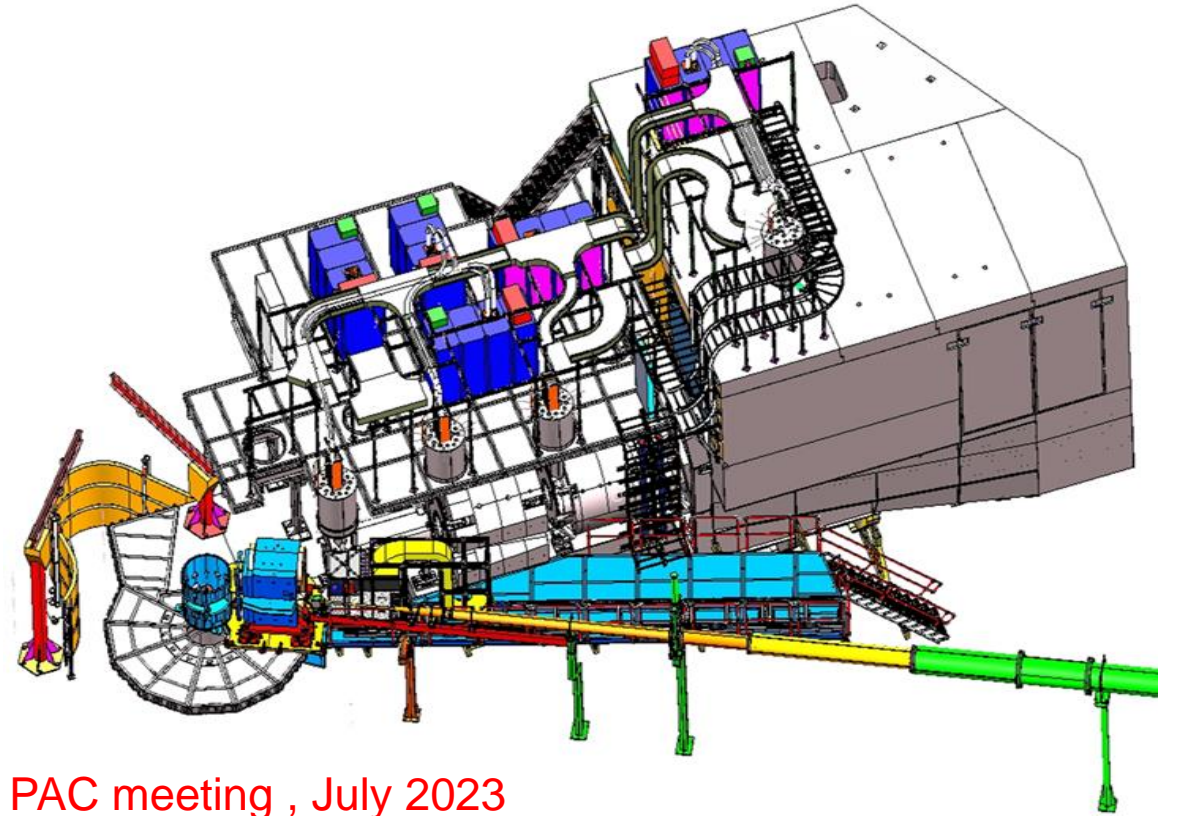
Hall A:

Neutron G_E/G_M by Beam-target Asymmetry



Hall C:

Neutral Particle Spectrometer



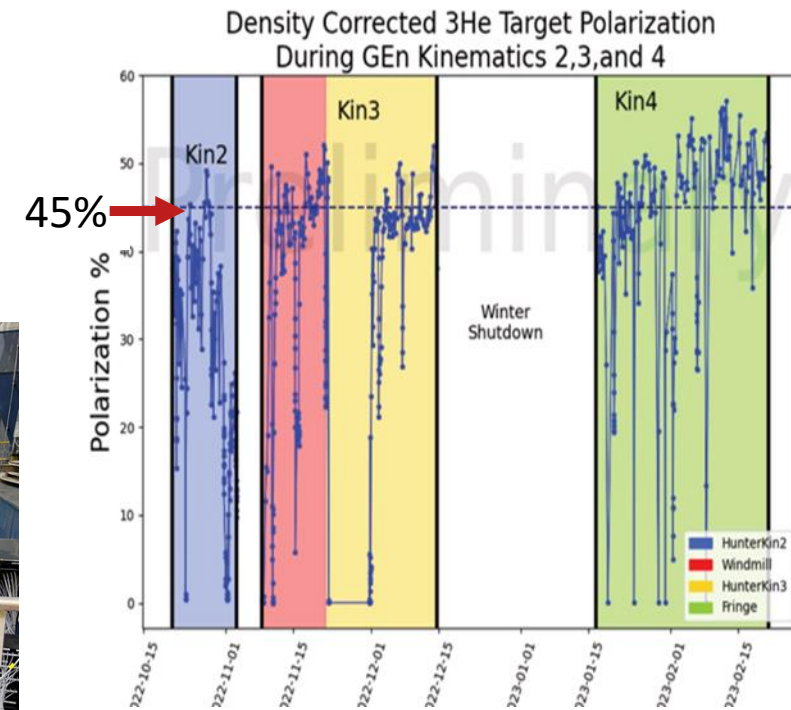
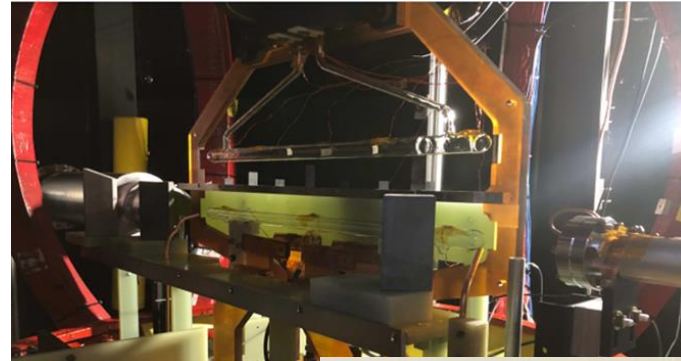
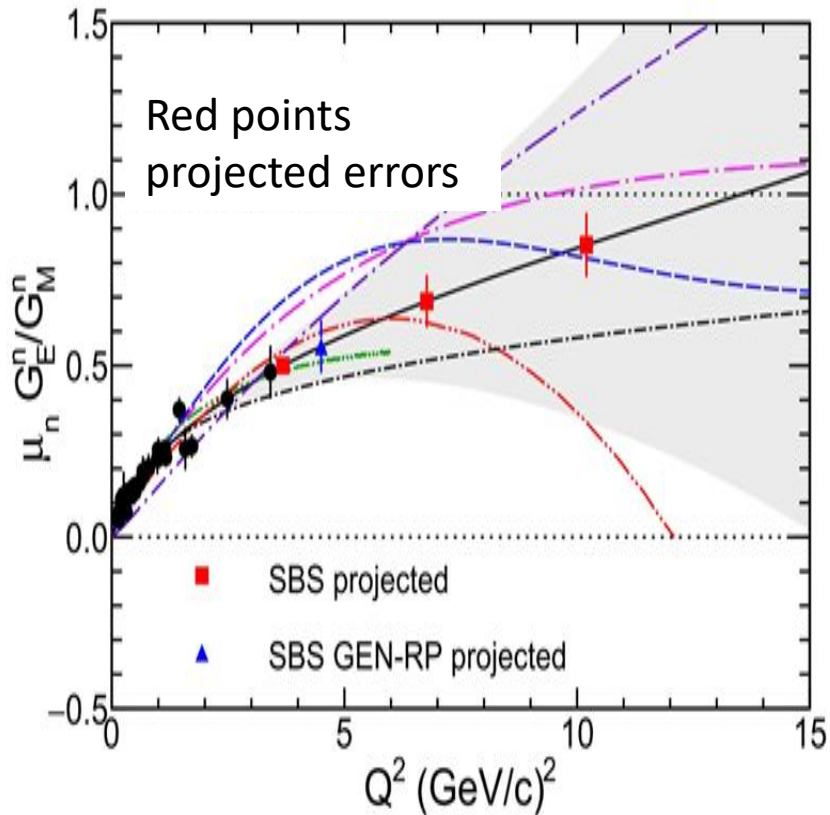
Mark Jones, Hall A/C Group Leader, PAC meeting , July 2023
Bob Michaels, Hall A/C Deputy Group Leader

Hall A: Past Year's Experiments (July 2022- March 2023)

Neutron G_E/G_M by Beam-target Asymmetry on polarized ^3He

- Started in Oct 2022
 - Completed $Q^2 = 2.9$ and 6.6 GeV^2
 - $Q^2 = 9.9 \text{ GeV}^2$ is partially done.
 - Complete final 6 weeks running from Sept 2023-Nov 2023

- Polarized ^3He target
 - First time running with 60cm long ^3He cell
 - 50-55% polarization in beam!



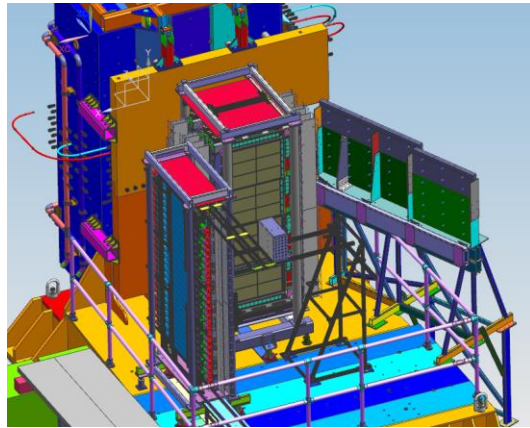
Hall A : Plan for coming years (Jan 2024 – July 2025)

Neutron G_E/G_M by recoil polarization

- Switch from 3He to LH2/LD2
- Plan to start in Spring 2024, $Q^2 = 4.5$



Test of SBS GEMs during 3He GEN.

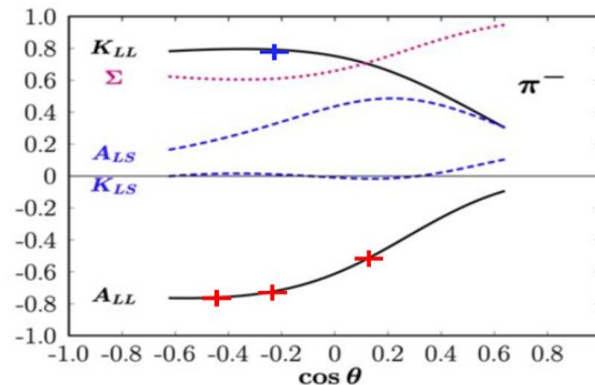


Polarimeter layout

Pion photo-production on neutron

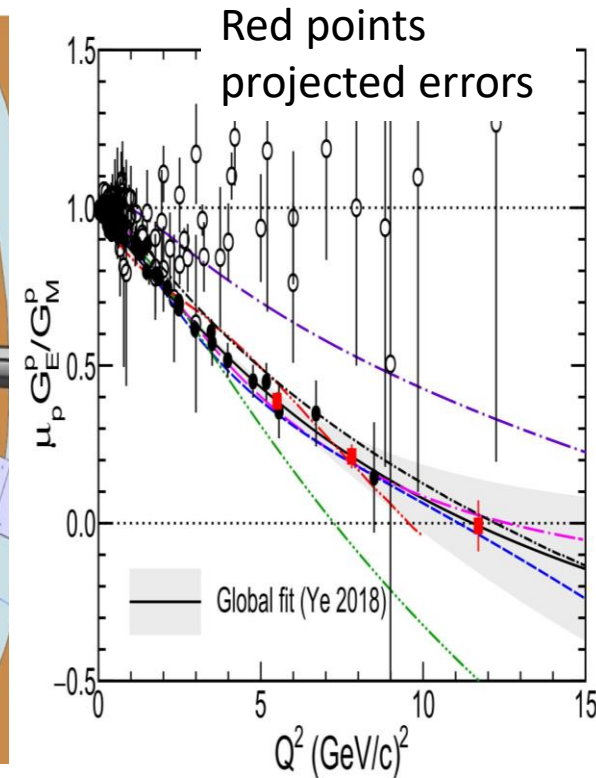
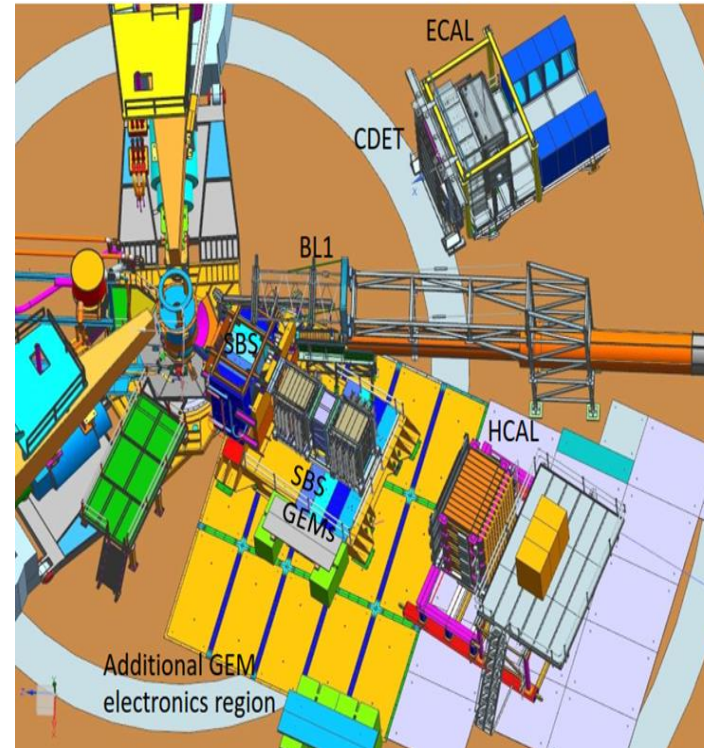
Short experiments

- Beam-target asymmetry, A_{LL}
- Recoil polarization, K_{LL}



Proton G_E/G_M by recoil polarization

- ECAL platform is in Hall A and plan to start stacking in August.
- After Neutron Recoil Polarization is completed
 - Need about 6 months for installation
- Experiment will run in late 2024 to spring 2025.

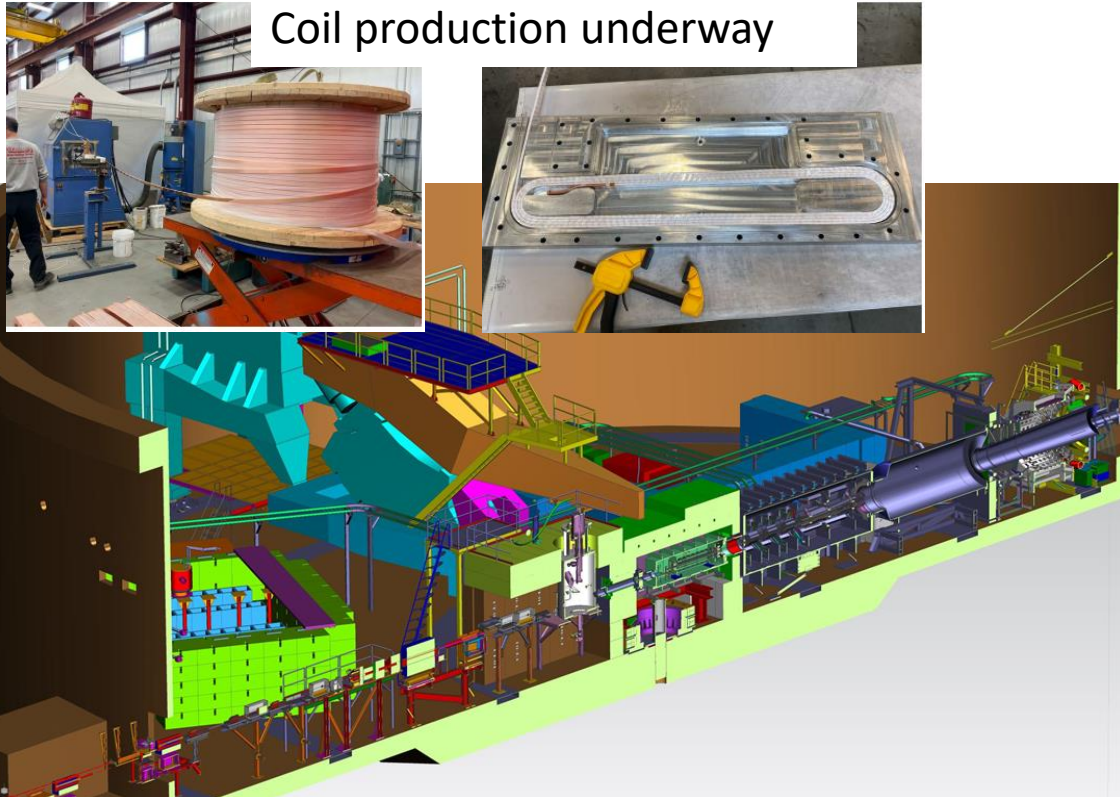


Hall A : Plans beyond July 2025

MOLLER

- Inflation Reduction Act provided full funding.
- In Jan 2023, passed CD-3A review and spending CD-3A funds.
- CD2 /CD3 review in October 2023.
- Aggressive installation schedule of 18 months after GEp run ends
- 3 years of running. Starting in Fall 2026
- Reuben Fair is new PM, Klaus Dehmelt is new DPM (Sept 1).

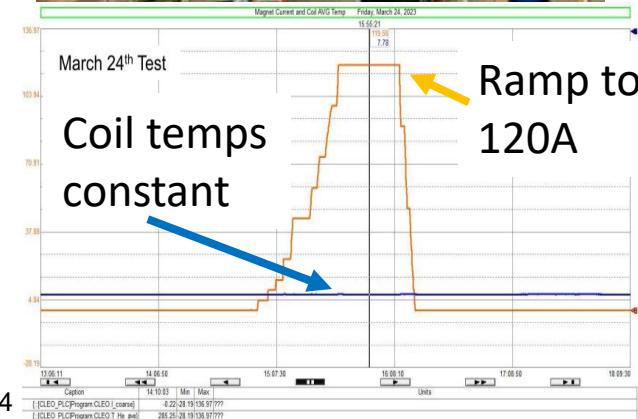
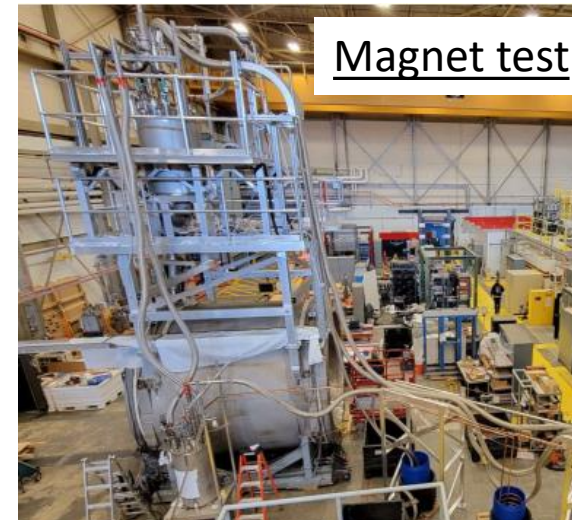
Coil production underway



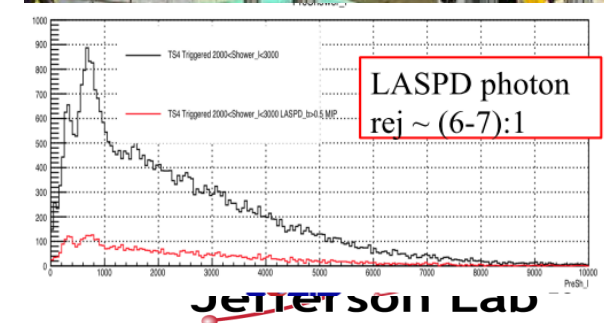
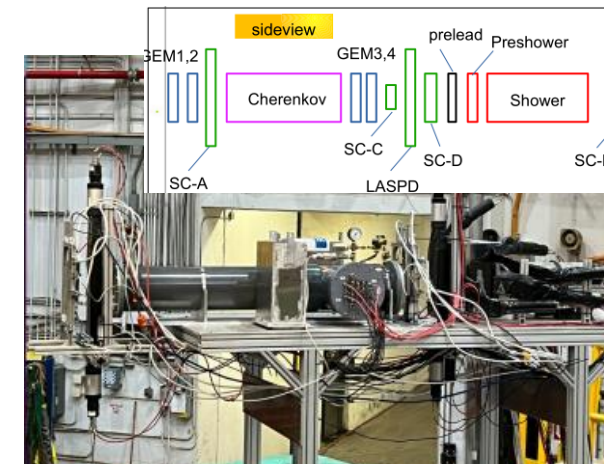
SoLID

- CLEO magnet cold test at 120A completed.
- High rate test of SoLID detector. Set at 8° and 17° in Hall C.
- SoLID mentioned in Recommendation 1 in the Hot/Cold QCD and the recommendations of FSNN LRP town meetings

Magnet test



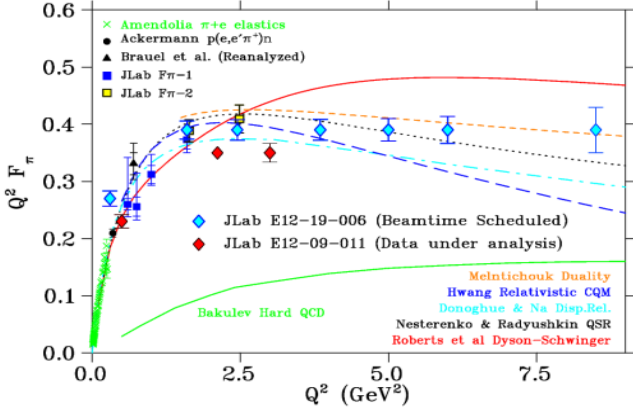
High rate test



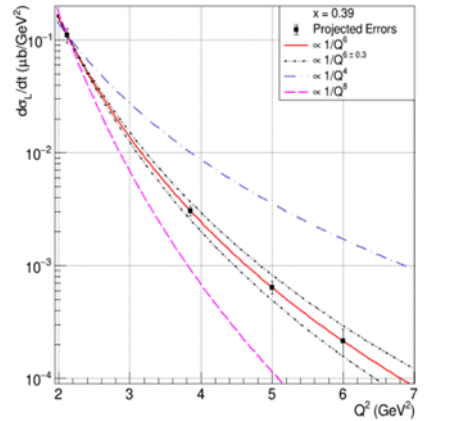
Hall C: Past Year's Running (July 2022-March 2023)

E12-19-006 : Ran from June to mid Sept to complete high ϵ points to match low ϵ points taken the previous run cycle.

Pion form factor to $Q^2 = 8.5$
Proposed error bars

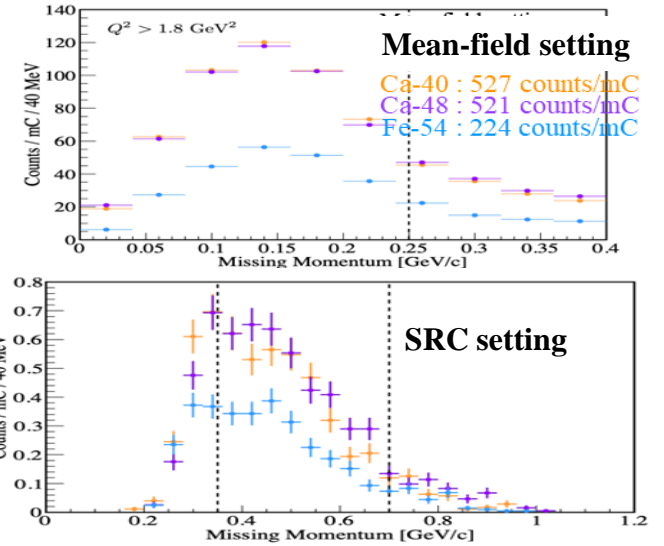
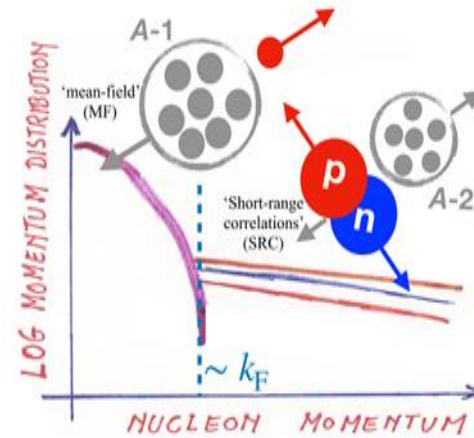


Test of factorization by measuring Q^2 dependence of σ_L



E12-17-005 : Ran at the end of Sept 2022 for two weeks

Compare 40Ca, 48Ca, 54Fe

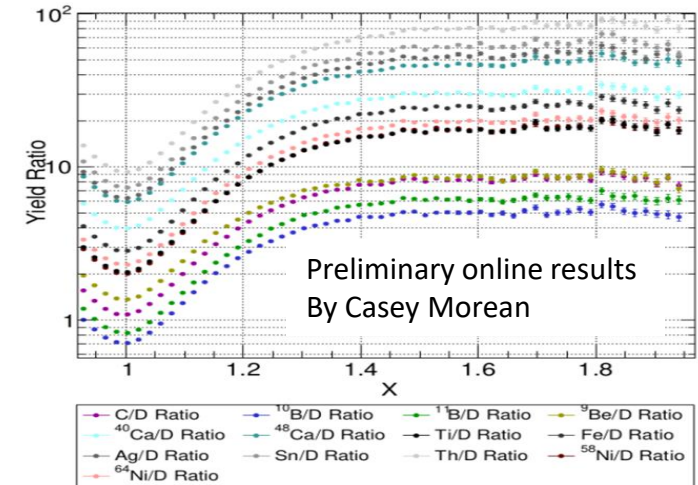
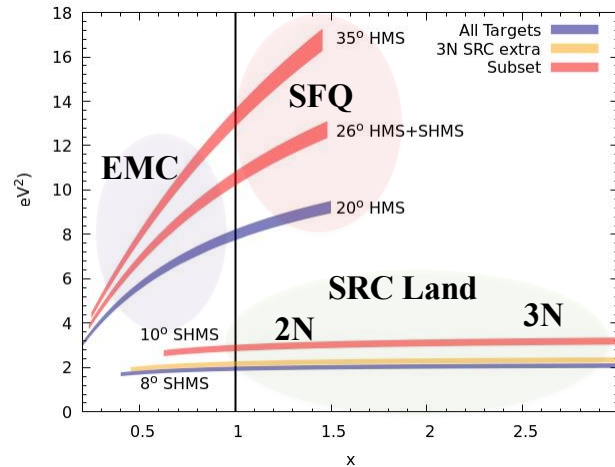
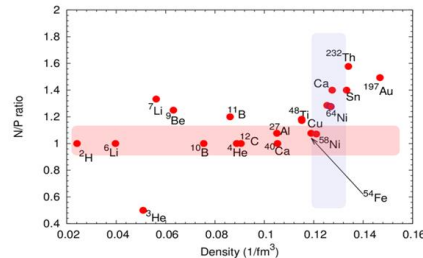


E12-10-008 Study EMC effect over range of nuclei

- 6Li and 7Li added to light nuclei already measured
- Flavor dependence with 40Ca and 48Ca

E12-06-105 Inclusive Scattering from Nuclei at $x > 1$

- Precision measurement of 2N SRC
 - A-dependence in light nuclei
 - Variation with neutron excess
 - Connect EMC effect and SRC
- First observations of 3N SRC
- Nuclear PDFs at $x > 1$ and look for superfa



E12-10-003 Deuteron Electro-Disintegration at Very High Missing Momentum

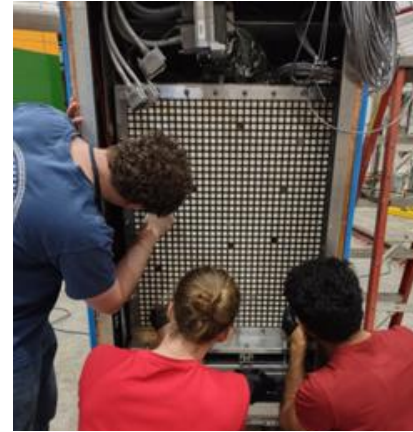
Hall C : Plan for next year (July 2023- July 2024)

Neutral Particle Spectrometer

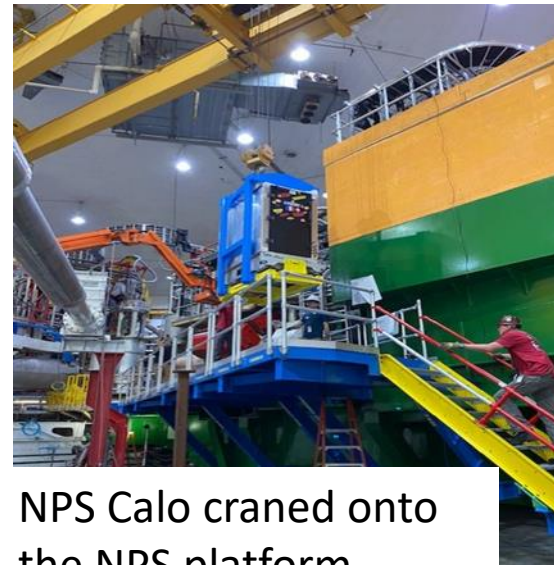
- Sweeping Magnet with calorimeter.
 - Magnet and power supply have been tested.
- NPS attached to SHMS carriage to allow easy angle change.
 - The calorimeter is on rails, cabled and taking cosmics.
- 1080 Lead-Tungstate blocks in calorimeter to detect γ and π^0

Two experiments using the NPS

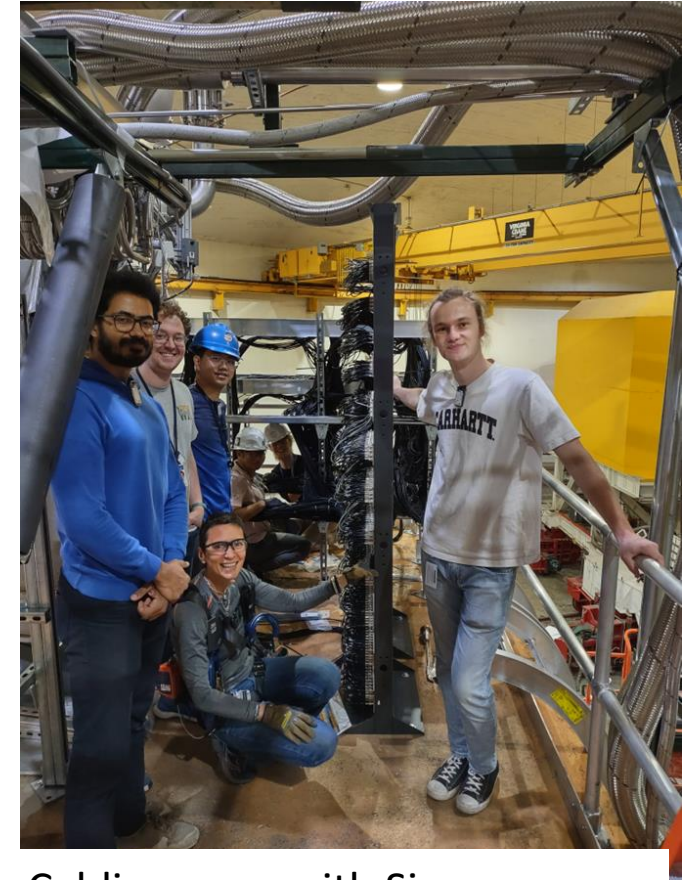
- [E12-13-010](#) is two concurrent experiments
 - Exclusive Deeply Virtual Compton on proton
 - SIDIS (e, e', π^0) cross section.
 - Map the transverse momentum dependence.
- [E12-22-006](#)
 - Exclusive Deeply Virtual Compton on deuteron
 - Subtract the proton data from deuteron data to get neutron.
- Proposal PR12-23-014 would be a new run group that measures $R = \sigma_L / \sigma_T$ in SIDIS (e, e', π^0) cross section.



Students putting fiducial marks on Calo



NPS Calo craned onto the NPS platform

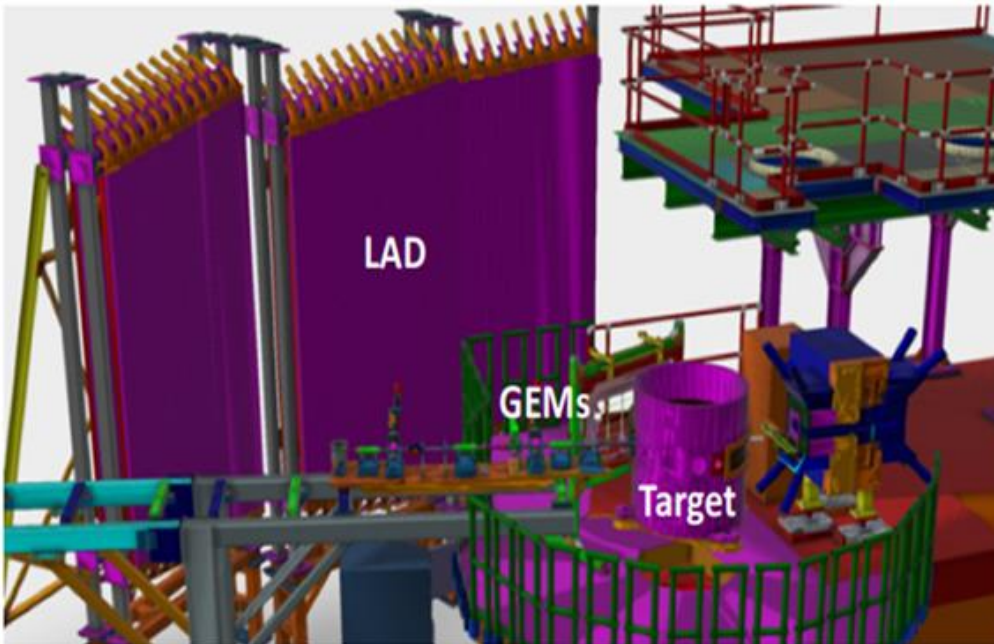


Cabling crew with Simona Malace who has led the installation of NPS Calo

Hall C: Plans beyond July 2024

Experiments to run in Fall 2024- Spring 2025

- Standard SHMS/HMS
 - [E12-06-104](#) $R=\sigma_L/\sigma_T$ in SIDIS on 1H and 2H
 - [E12-06-107](#) Complete CT experiment
 - [E12-11-107](#) Spectator tagged DIS $d(e,e'p_s)$
Install Large Angle Detector
HMS/SHMS detect electron



Fall 2025 and beyond

- **Depends on PAC recommendations**
- Starting in Fall 2025
 - Standard SHMS/HMS experiments.
 - Experiments with non-standard beam energies
 - New proposals
- Running during MOLLER and after:
- During MOLLER, limits on total target power and beam current in the two halls
 - Hypernuclear experiments in 2026
 - Polarized deuteron experiments
 - WACS and other experiments using the NPS
 - Experiments using the Compact Photon Source
 - Capital project is ongoing
 - SBS/BB experiments that did not run in Hall A
 - Exciting new letters of intent
- Future plans will incorporate needs of the other halls and target group resources.