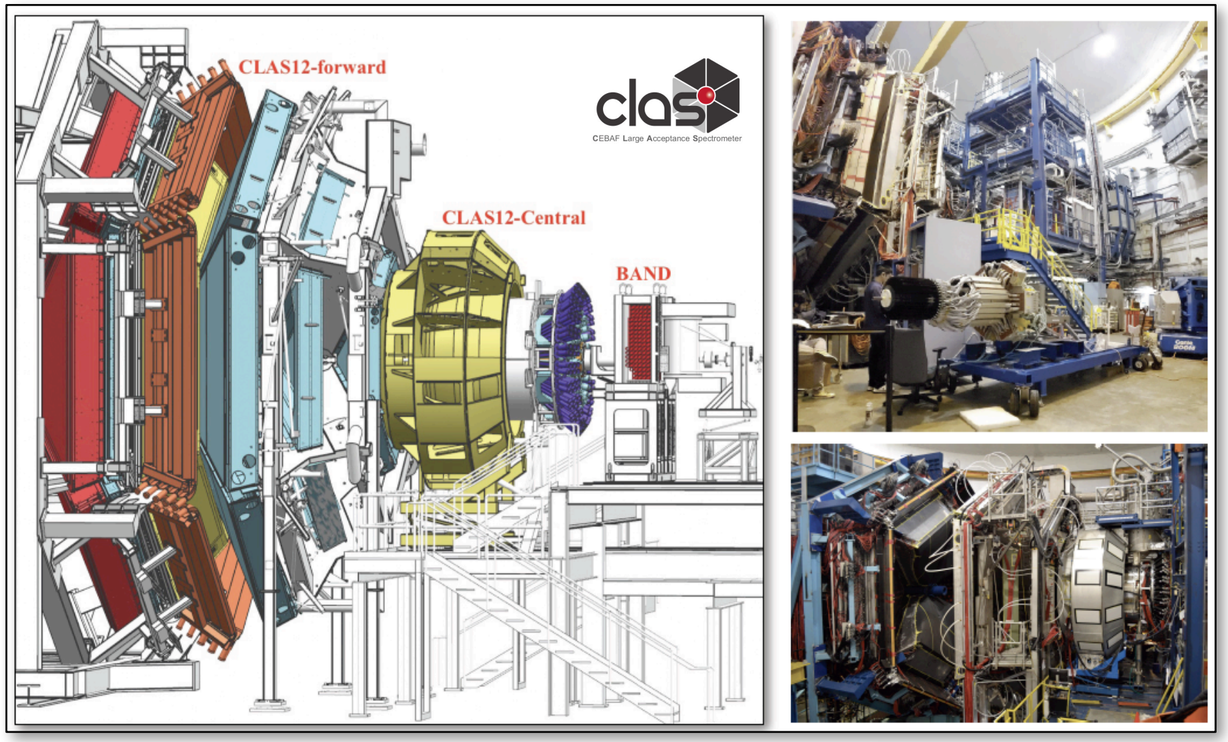
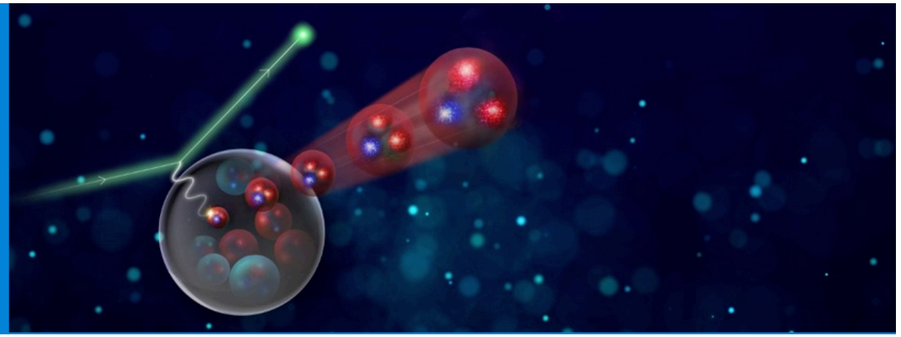


PAC49

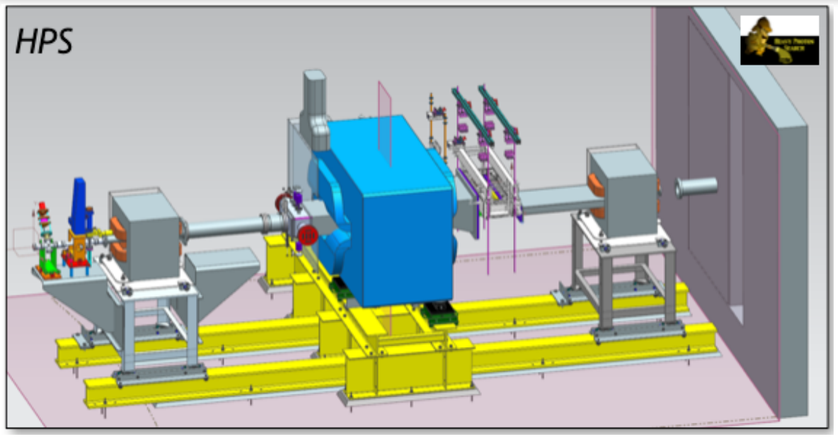
July 19 - 23, 2021

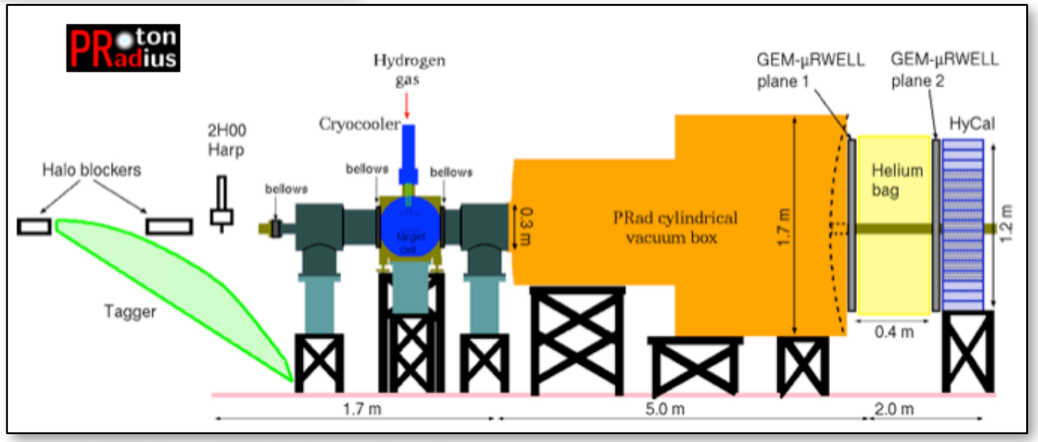


Hall-B report

PAC49
Jul 19-23, 2021

Marco Battaglieri
Jefferson Lab





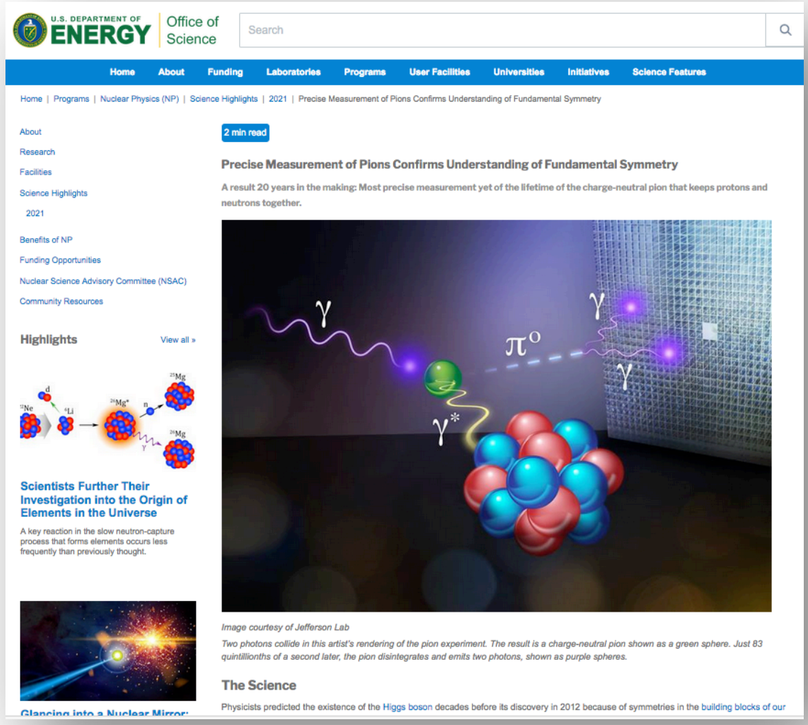
Hall-B highlights

- **CLAS12 physics runs:**
  - RG-A (13 proposals,139 PAC days) - partial -
  - RG-K (3 proposals, 100 PAC days) - partial -
  - RG-B (7 proposals, 90 PAC days) - partial -
  - RG-F (BONUS, 42 PAC days) - completed -

- HDice tests at UITF - completed -

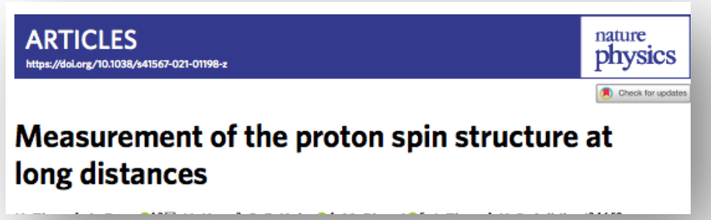
- **Continued flow of results from Hall-B (CLAS6+CLAS12)**
  - ~ 230 physics papers in peer reviewed journals (> 14,000 citations)
  - 4 papers in **Nature** (+1 **Nature Phys.**), 1 paper in **Science**
  - >2,660 conference talks (~1,680 invited)

- **Specialized Hall B experiments**
  - PRAD experiment – results published in **Nature**
  - PRIMEX - results published in **Science (DOE-NP highlight)**
  - HPS - Heavy Photon Search

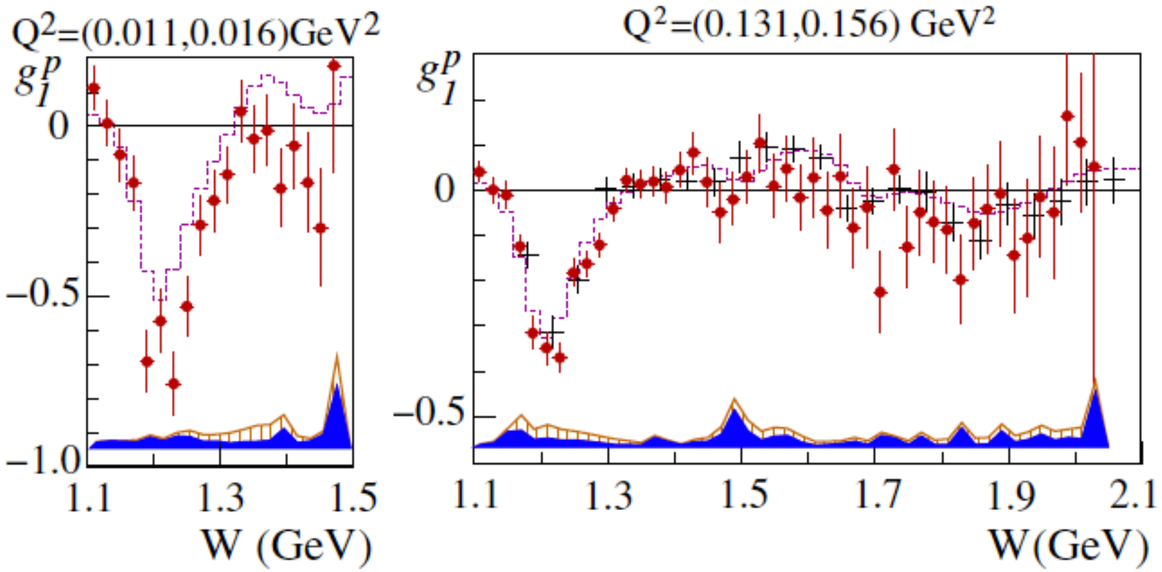


Measurement of the proton spin structure at long distances

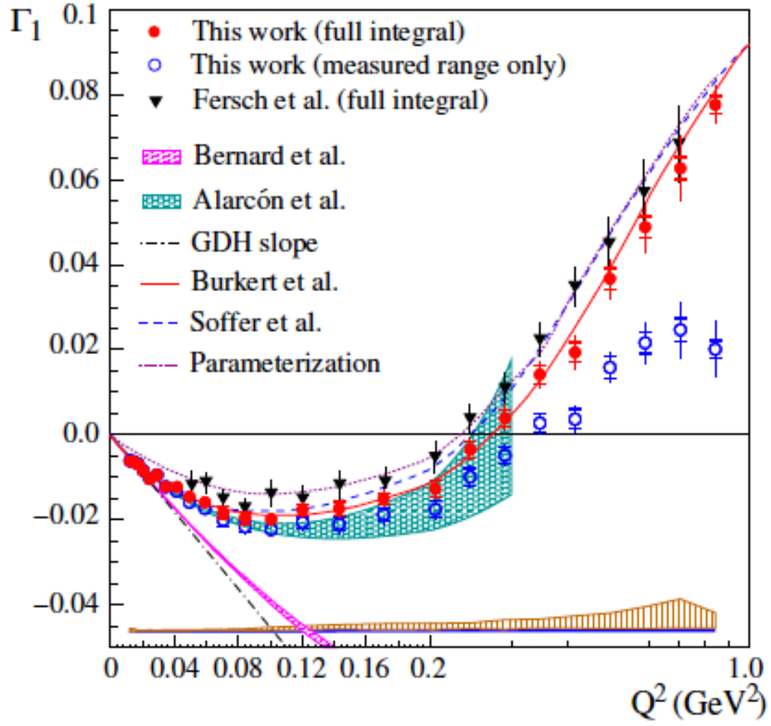
Nature Physics Vol. **17**, 736-741 (2021)



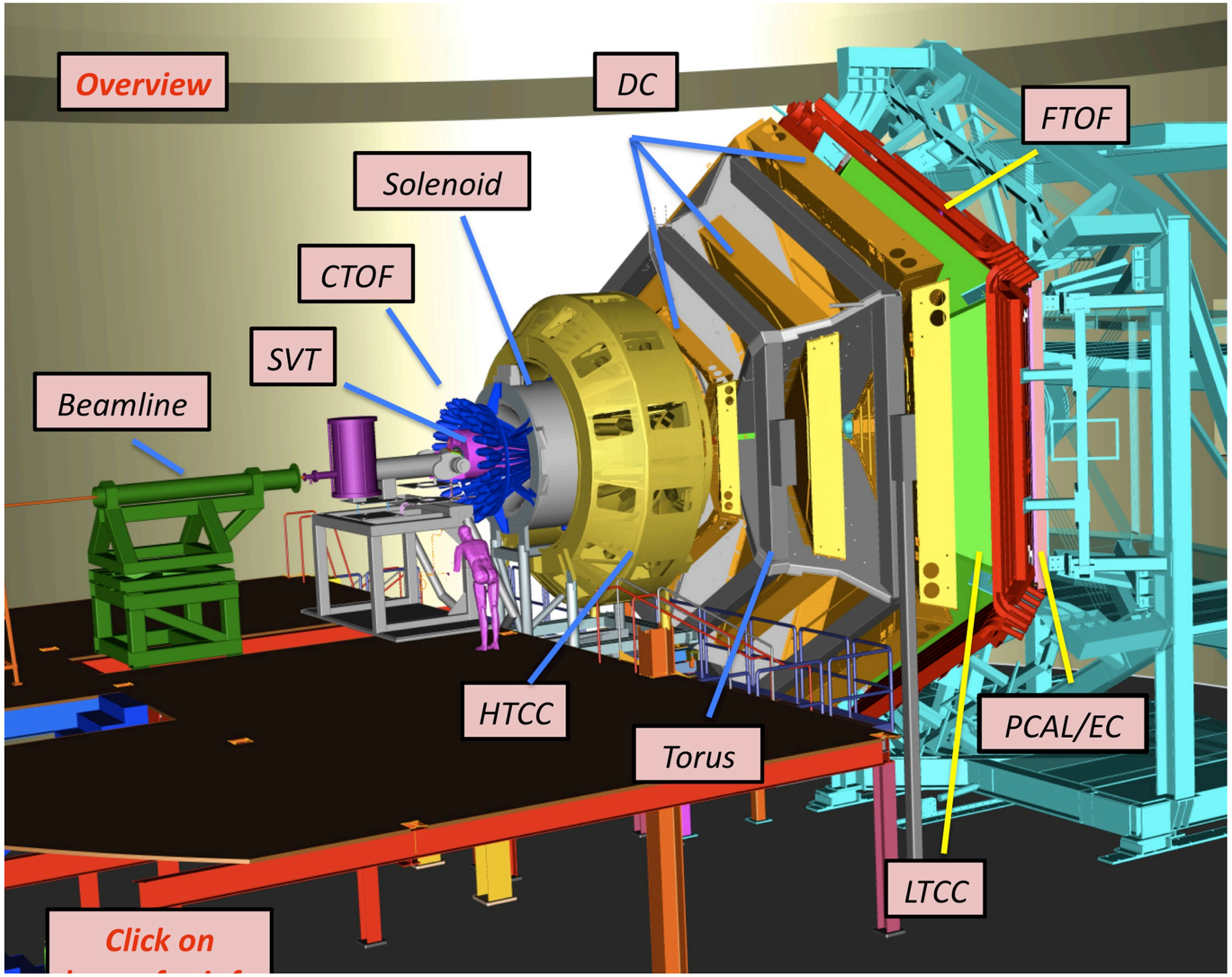
- Lattice or EFT to describe QCD at long distances (non-perturbative). Spin observables can challenge XEFT, widely used to describe other observables
- Spin-dependent xsection in nucleon resonance region at very low Q2: E=1.1GeV - 3.0 GeV, NH3 DNP (longitudinal) target PT~75%-90% + P_{Beam}~85% + e' in CLAS

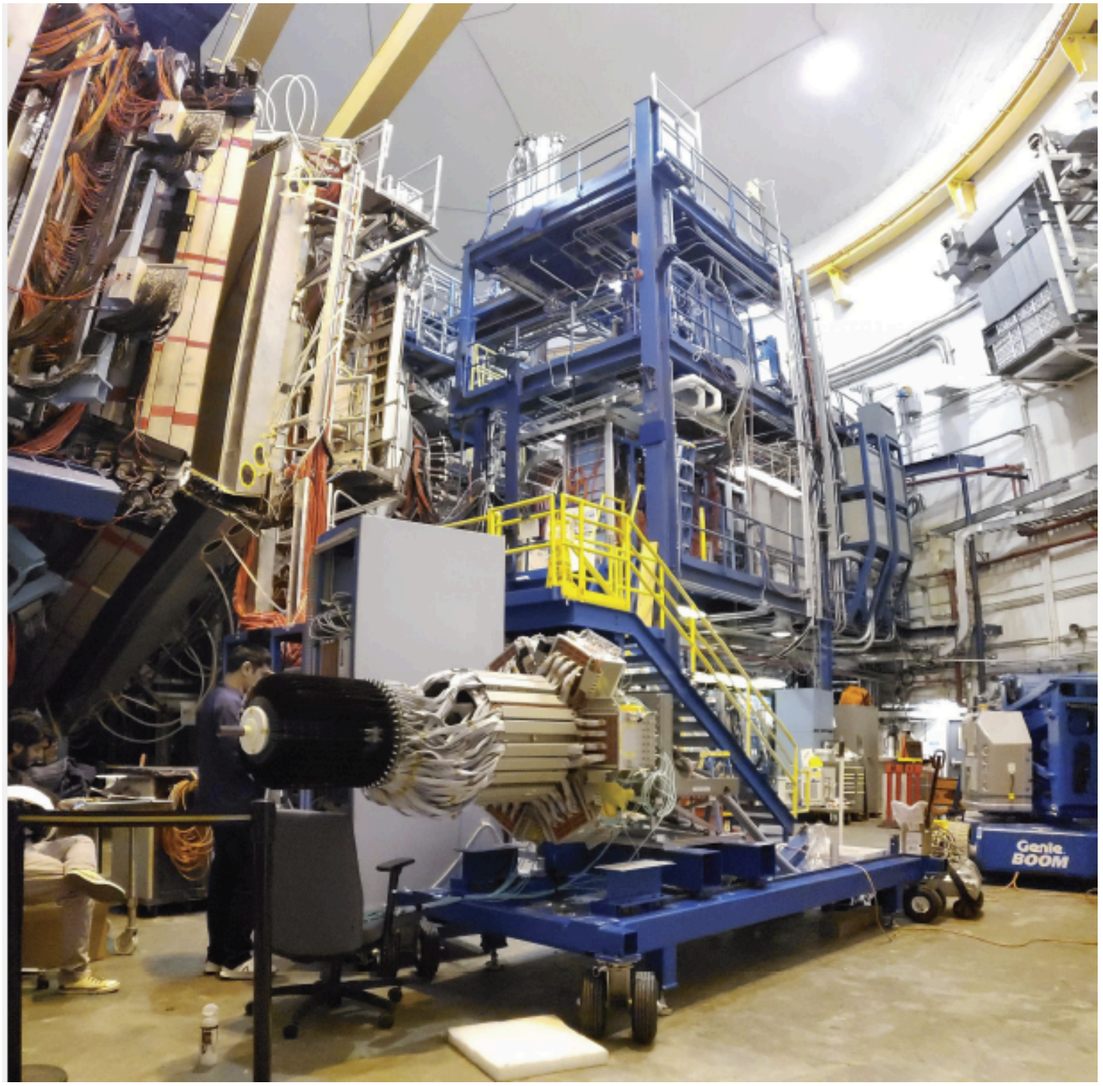


$$I(Q^2) = \frac{2M^2}{Q^2}\int_0^{x_0} \left[A_1(x,Q^2)F_1(x,Q^2)\right] dx$$



- Good agreement with phenomenological model
- XEFT are reasonably in agreement but room to improve the theory with new CLAS data


Overview
DC
FTOF
Solenoid
CTOF
SVT
Beamline
HTCC
Torus
PCAL/EC
LTCC
Click on


Genie
BOOM

Data Taking

- **Run Group A**:
  - 13 experiments
  - 10.2-10.6 GeV polarized electrons
  - Liquid-hydrogen target
  - ~300 mC, ~50% of approved beam time
- **Run Group K**:
  - 3 experiments
  - 6.5, 7.5 GeV polarized electrons
  - Liquid-hydrogen target
  - ~45 mC, ~12% of approved beam time
- **Run Group B**:
  - 7 experiments
  - 10.2-10.5 GeV polarized electrons
  - Liquid-deuterium target
  - ~155 mC, ~43% of approved beam time
- **Run Group F (BONUS)**:
  - 7 experiments
  - 10.2 GeV polarized electrons (+2.2 GeV for calibration)
  - Gas-deuterium target +RTPC
  - ~92% of approved beam time (Run concluded!)

CLAS12 data taking

- from Feb 2017 (KPP) to Summer 2020 (physics runs)
  - **Nuclear targets test (special run)**:
    - 10.2 GeV electrons
    - LD2, LHe and Pb targets
    - 100% of scheduled time

From PAC48 meeting

- **RG-F: Winter '20 collected the remaining 50%**
- **Scheduled Accelerator Down activity in Hall in preparation for 2021 fall runs**
- **Completed HDice/UITF tests**
- **Physics analysis (first CLAS12 publication!)**

RG-A

Proposal	Physics	Contact	Rating	Days	Group	Equipment	Energy	Run Group	Target
E12-06-108	Hard exclusive electro-production of π^0, η	Stoler	B	80	139	RICH (1 sector) Forward tagger	11	A L.Elouadrhiri	liquid H_2
E12-06-108A	Exclusive N*->KY Studies with CLAS12	Carman		(60)					
E12-06-108B	Transition Form Factor of the η' Meson with CLAS12	Kunkel		(80)					
E12-06-112	Proton's quark dynamics in SIDIS pion production	Avakian	A	60					
E12-06-112A	SIDIS Λ productiuon in target fragmentation region	Mirazita		(60)					
E12-06-112B	Colinear nucleon structure at twist-3	Mirazita		(60)					
E12-06-119(a)	Deeply Virtual Compton Scattering	Sabatie	A	80					
E12-09-003	Excitation of nucleon resonances at high Q^2	Gothe	B+	40					
E12-11-005	Hadron spectroscopy with forward tagger	Battaglieri	A-	119					
E12-11-005A	Photoproduction of the very strangest baryon	Guo		(120)					
E12-12-001	Timelike Compton Scatt. & J/ψ production in e+e	Nadel-Turonski	A-	120					
E12-12-001A	J/ψ Photoproduction & study of LHCb pentaquarks	Stepanyan		(120)					
E12-12-007	Exclusive φ meson electroproduction with CLAS12	Girod	B+	60					
Days of run (updated July 15 2021)					69 (50%)				

RG-K

Proposal	Physics	Contact	Rating	Days	Group	Equipment	Energy	Group	Target
E12-16-010	A search for Hybrid Baryons in Hall B with CLAS12	D'Angelo	A-	100	100	Forward Tagger	6.6, 8.8	K Confinement & Strong QCD A. d'Angelo	IH2
E12-16-010A	Nucleon Resonances in exc. KY electroproduction	Carman	A-	(100)					
E12-16-010B	DVCS with CLAS12 at 6.6 and 8.8 GeV	Elouadrhiri		(100)					
Days of run (updated July 15 2021)					12 (12%)				

RG-B

Proposal	Physics	Contact	Rating	Days	Group	Equipment	Energy	Group	Target
E12-07-104	Neutron magnetic form factor	Gilfoyle	A-	30	90	Neutron detector RICH (1 sector) Forward tagger	11	B S.Niccolai	liquid D_2 targe
E12-09-007(a)	Study of partonic distributions in SIDIS kaon production	Hafidi	A-	30					
E12-09-008	Boer-Mulders asymmetry in K SIDIS w/ H and D targets	Contalbrigo	A-	56					
E12-09-008A	Hadron production in target fragmentation region	Mirazita		(60)					
E12-09-008B	Colinear nucleon structuer at twist-3	Mirazita		(60)					
E12-11-003	DVCS on neutron target	Niccolai	A	90					
E12-11-003A	In medium structure functions, SRC, and the EMC effect	Hen		(90)					
E12-003B	J/Phsi production on deuterium	Ilieva	N/A	(80)					
Days of run (updated August 7 2020)					39 (43%)				

RG-F

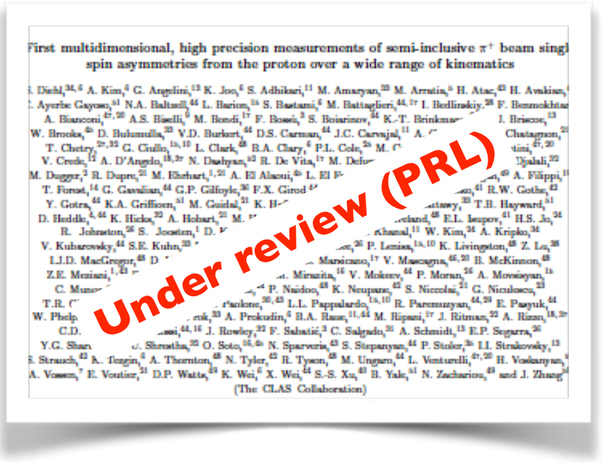
Completed

Proposal	Physics	Contact	Rating	Days	Group	Equipment	Energy	Group	Target
E12-06-113	Free Neutron structure at large x	Bueltman	A	42	42	Radial TPC	11	F S. Kuhn	Gas D_2
Days of run (updated July 15 2020)					39 (92%)				

First multidimensional, high precision measurements of semi-inclusive π^+ beam single spin asymmetries from the proton over a wide range of kinematics

- So far, good mapping of 1D PDF (longitudinal momentum dependence)
- Are the q carrying an orbital angular momentum? how is it connected to the spin of the nucleon? q correlations?
- 3-D structure accessed trough Transverse Momentum dep. Distributions (TMDs)
- Semi Inclusive DIS (SIDIS) to study the transverse structure of the nucleon
- Single Spin Asymmetries (SSA) sensitive to TMDs and Fragmentation Functions (FF)
- Beam SSA: twist-3, subleading, O(M/Q), accessible in fixed target, medium energy (~10 GeV) experiments

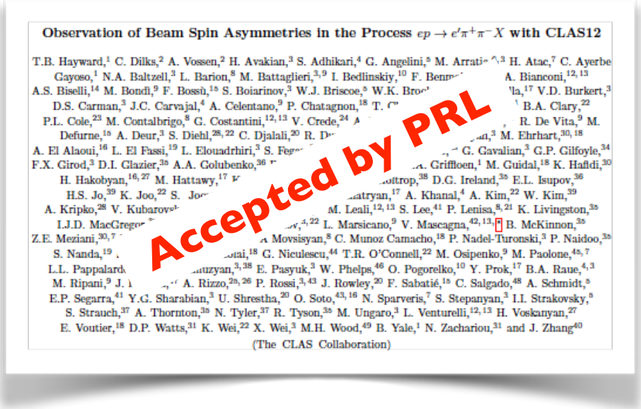
★ First multi-D measurement over a wide kinematic range
★ Extraction of Collins and TMD functions



First Observation of Beam Spin Asymmetries in the Process e p → e' π^+ π^- X with CLAS12

- SIDIS ingredients: q in the nucleon (PDF), hadronization (Fragmentation Functions)
- Fragmentation in 2h is sensitive to *several* TMDs and Dihadron Fragmentation Functions (DiFFs)
- Spin-momentum correlations in hadronization
- Access to PDF e(x) (transv polarized q in a unp nucleon, tw-3) and Dihadron FF G1-perp (helicity of fragmenting q)
- Complement single-hadron SIDIS, with the advantage of another degree of freedom

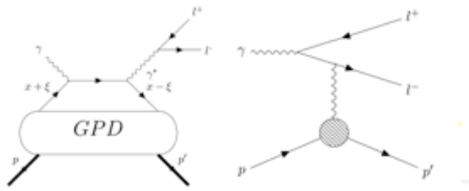
★ First measurement of BSA in di-h production
★ Sub-leading PDF e(x) different from 0
★ First helicity-deg FF $G_1^\perp$ observation



Credit: S.Diehl, T.Hayward, Latifa E.

Timelike Compton Scattering

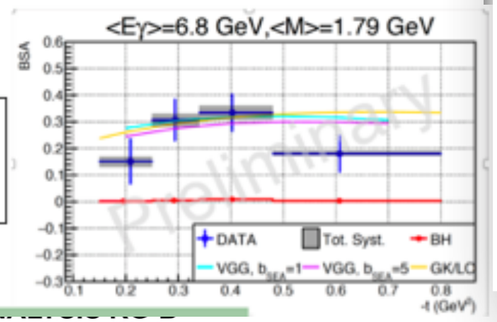
TCS: $\gamma p \to e^+e^- p'$



Pierre Chatagnon
INFN Genova (CMS group
chatagnon@pno.in2p3.fr/pchatagnon@ge.infn.

Final state selection from PID

$e\ p \to (e')\gamma p \to (X)\ e^+e^-p'$



TCS – Analysis Note Approved – Preparing the paper for the Ad Hoc Committee review

RGA – TIMELINE FOR FY21 PUBLICATION

- Analyses are in very advanced stage, all corrections developed analyses notes being written
- Require normalization: performing detailed extensive simulations and cross checks

July
J/psi, SIDIS , Multiplicities
Inclusive cross section
Draft analyses notes ready For RGA/PWG review and coordination

September
J/psi, SIDIS Multiplicities
Inclusive cross section
Analyses notes finalized and ready PWG committee review

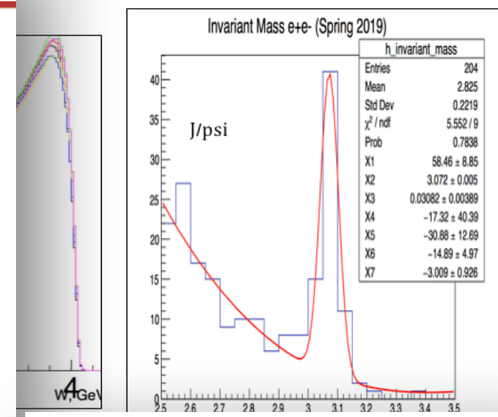
November
J/psi, SIDIS Multiplicities,
Inclusive cross section
Papers ready for Ad Hoc committee review

June
Exclusive Processes
Beam Spin Asymmetries, DVCS, P0, Phi, ...
Draft analyses notes ready for RGA/PWG review and coordination

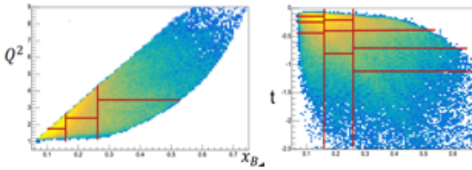
August
Exclusive Processes
Beam Spin Asymmetries, DVCS, P0, Phi, ...
Analyses notes finalized and ready PWG committee review

October
Exclusive Processes
Beam Spin Asymmetries, DVCS, P0, Phi, ...
Papers ready for Ad Hoc committee review

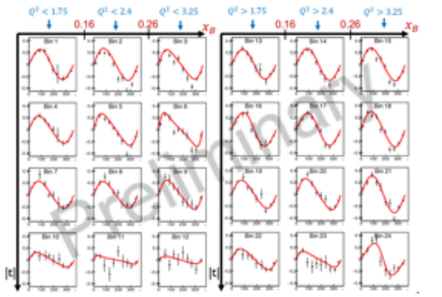
: INCLUSIVE AND J/PSI



RGA - DEEP EXCLUSIVE HIGH

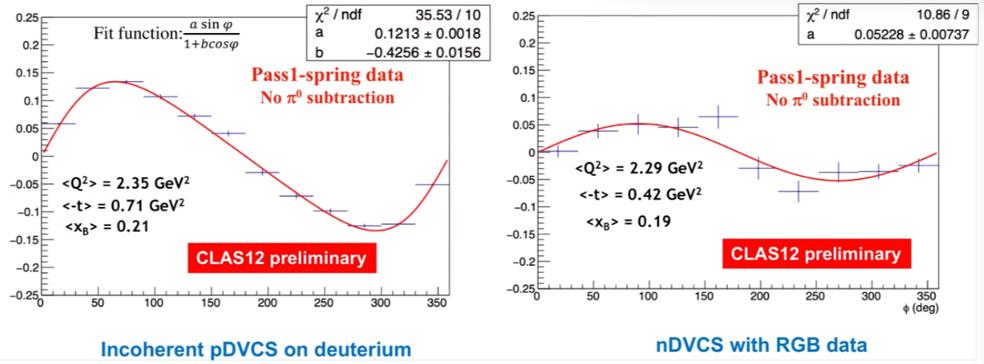


DVCS Beam Spin Asymmetry



DVCS and π^0 are being finalized and analysis note being written

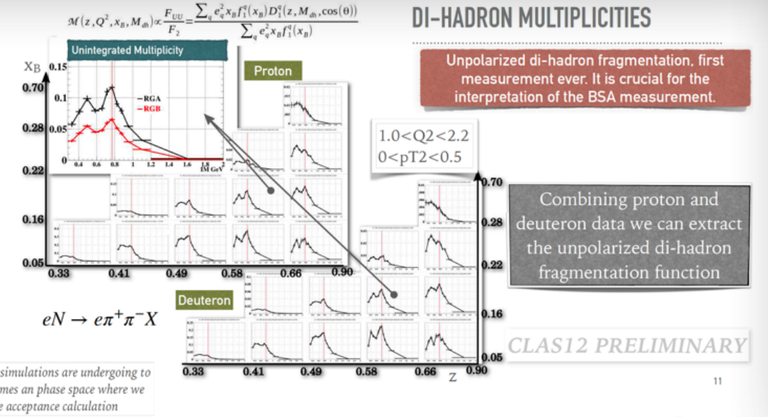
Credit: Latifa E., G.Angelini, N.Markov, P.Chatagnon, A.Kim, F.Bossu, M.Defurne, F.X. Girod, S.Niccolai



Incoherent pDVCS on deuterium

nDVCS with RGB data

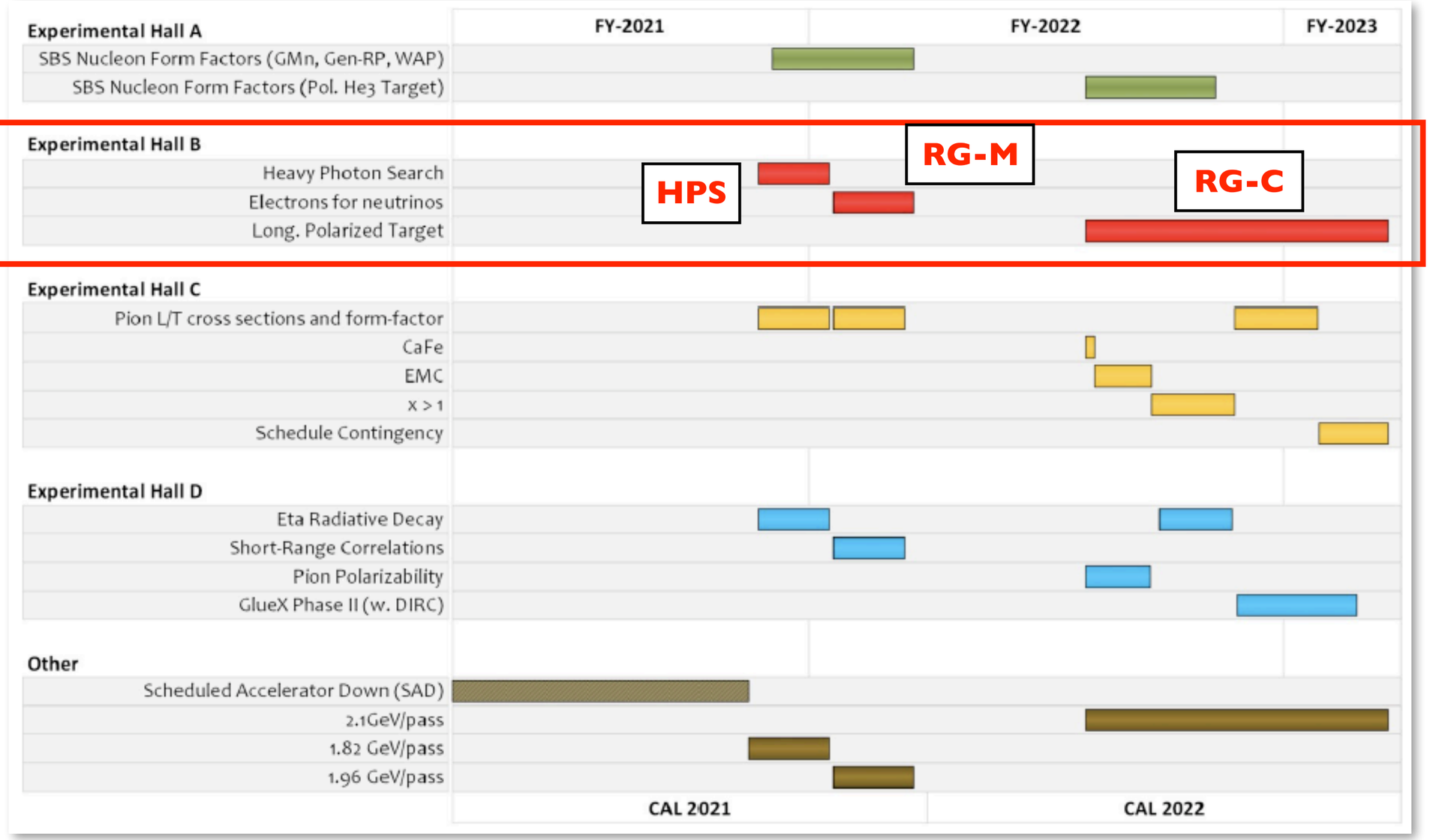
RGA- SIDIS - HIGHLIGHTS



Detailed studies on new simulations are undergoing to determine fiducial volumes an phase space where we have control of the acceptance calculation

Scheduling

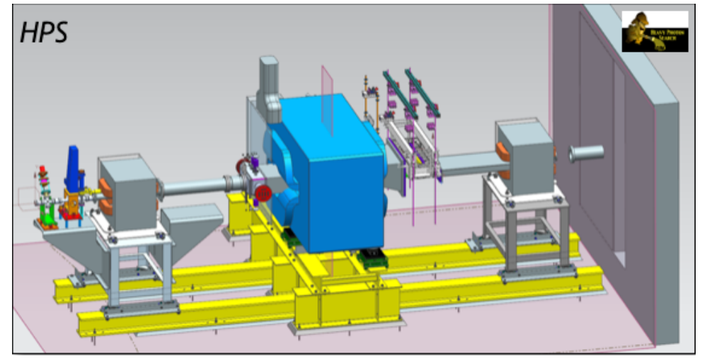
Hall-B

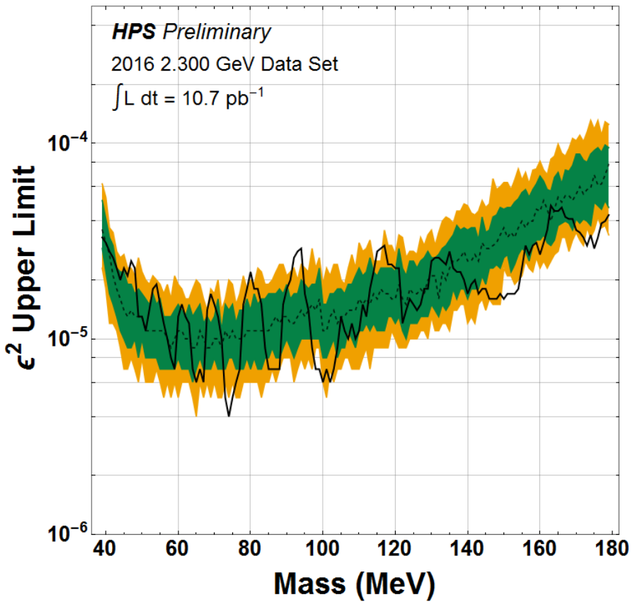


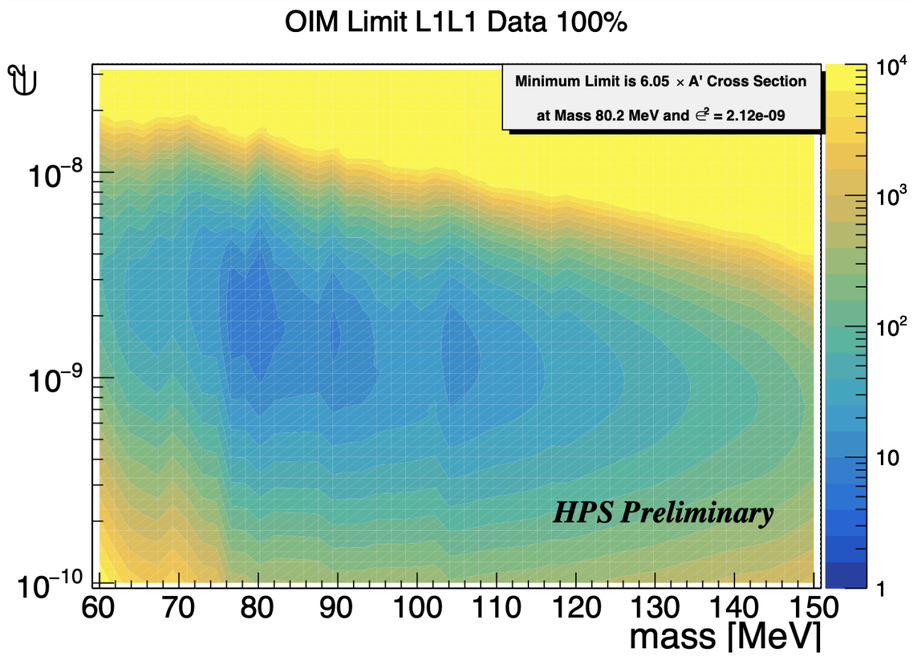
Heavy Photon Search

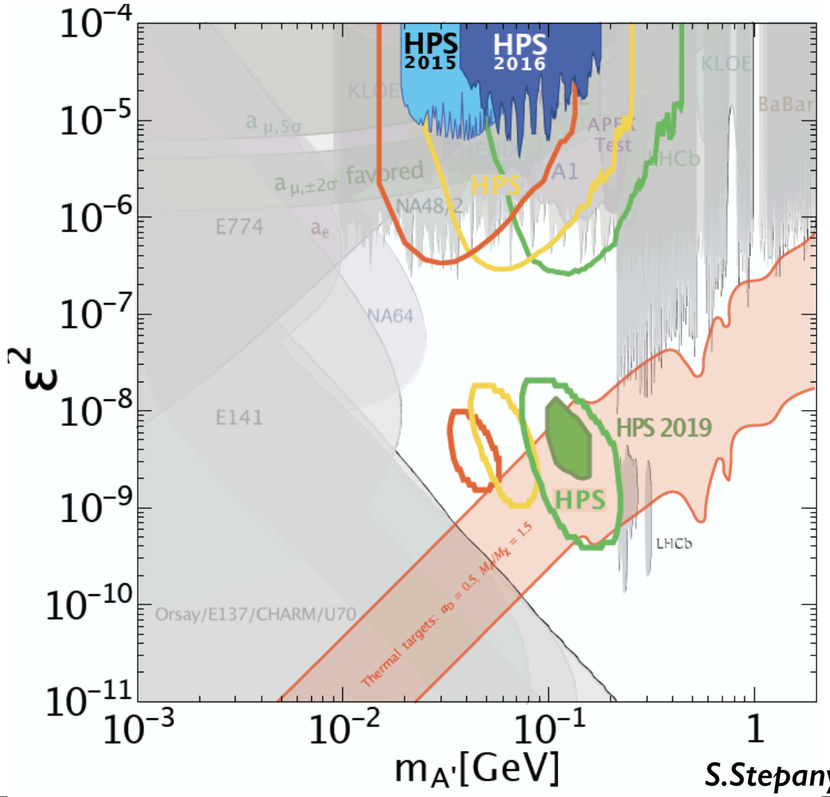
Hall B

- HPS Collaboration is preparing the Summer 2021 run (27/135 PAC days) at 3.7 GeV (same 2019 run detector setup with some upgrades)
- Calibration of 2019 data almost done: ready for Pass0
- The vertexing analysis of 2016 data are approved to be unblinded, final results are expected to be released soon. Working on the paper draft.



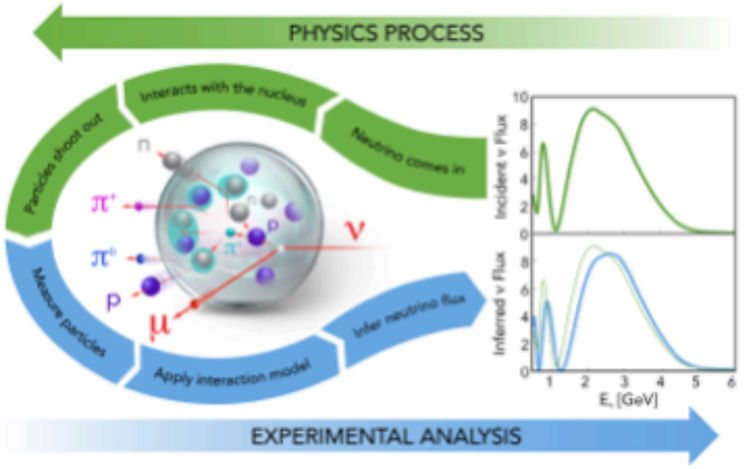






Electrons for neutrinos

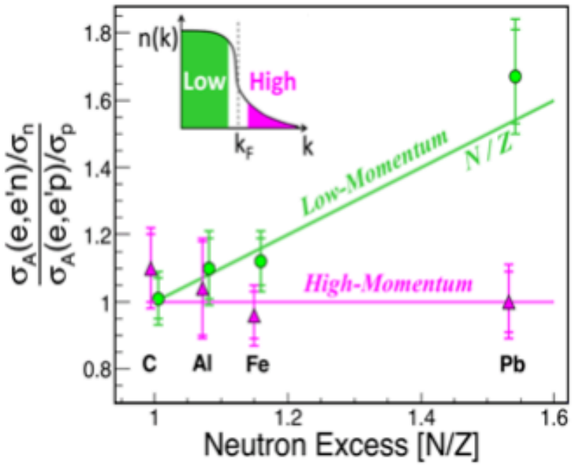
- Take (e,e'X) data to test vector-current part of neutrino-nucleus event generators
  - Energy reconstruction techniques
  - Event generators key to reconstructing oscillation parameters



- Scheduled for 30 PAC days: October-December 2021
- D, 4He, C, [O,] 40Ar, 40Ca, 48Ca, Sn
  - Targets designed and under development
  - Standard liquid target cell
  - Short 0.5-cm Ar liquid target cell
  - Solid target C, Sn insertion mechanism
  - Special Ca target holders

Short Range Correlations

- Build on the tremendous success of the CLAS6 data mining SRC program (Science, several Nature, …)
- Take far more (e,e'pN) and (e,e'pNN) data on a wider range of nuclei
  - Three nucleon SRCs?
  - Constraining the NN interaction at short distances
  - Understanding factorized effective theories
  - SRC formation mechanisms
  - SRCs and the EMC Effec



Experiments will use longitudinally polarized NH3/ND3 target

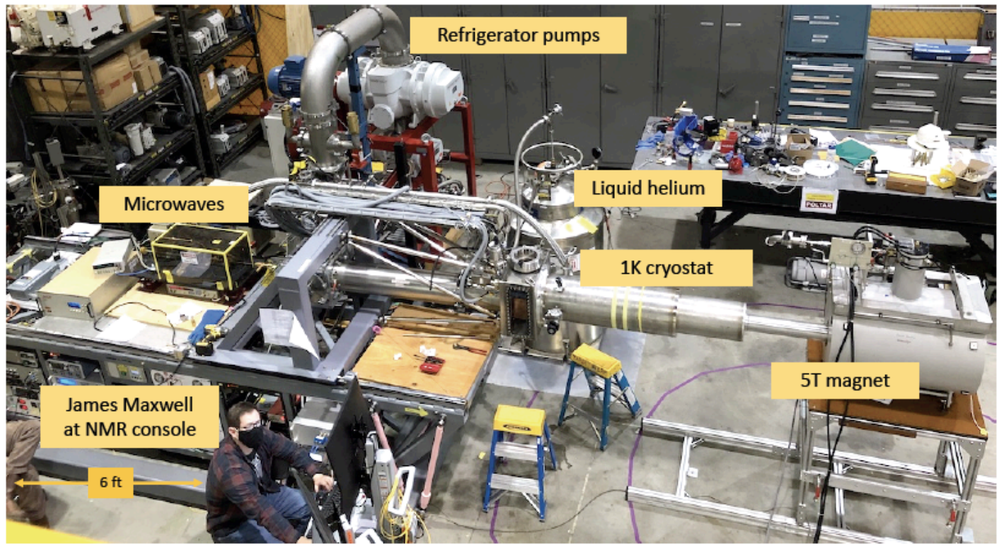
E12-06-109	Longitudinal Spin Structure of the Nucleon	Kuhn	A	80	185	Polarized target RICH (1 sector) Forward tagger	11	C S. Kuhn	NH_3 ND_3
E12-06-109A	DVCS on the neutron with polarized deuterium target	Niccolai		(60)					
E12-06- 119(b)	DVCS on longitudinally polarized proton target	Sabatie	A	120					
E12-07-107	Spin-Orbit Correl. with Longitudinally polarized target	Avakian	A-	103					
E12-09-007(b)	Study of partonic distributions using SIDIS K production	Hafidi	A-	80					
E12-09-009	Spin-Orbit correlations in K production w/ pol. targets	Avakian	B+	103					

RGC: - Originally approved for 185 days of beam time
PAC48-Jeopardy: - Reduced beam time to 120 days w/ focus on DVCS (proton, neutron)
- For remaining beam time return to PAC with new impact study
- Emphasizes availability of Forward Tagger

- Run plan: 90/120 PAC days FT-Off configuration; 30/120 PAC days FT-On configuration
- May 2 - Dec 20 2021
- Installation/preparation plan defined (+2 months for DNP target)
- New tungsten Moller cone, optimized raster size and target geometry: DC occupancies comparable to the simulations for RG-A

Longitudinally polarized targ

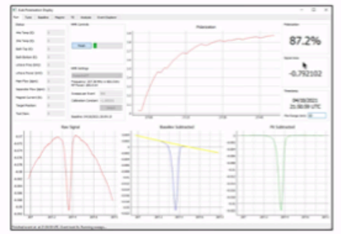
Latest tests in the Target Lab, April '21



NOT SHOWN
- James Brock
- Chris Carlin
- Tsuneyo Kageya
- Chris Keith
- Victoria Lagerquist
- Pushpa Pandey
- Xiangdong Wei

Longitudinally polarized target

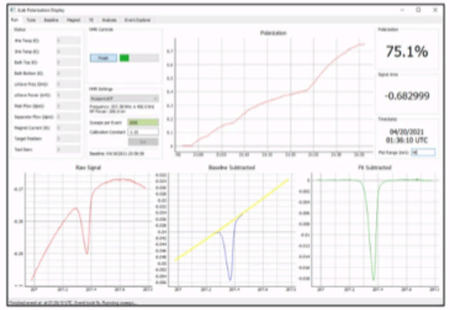
High Dynamic Polarization
- Butanol + TEMPO



Butanol reached +87% in about 50 minutes

Longitudinally polarized targe

High Dynamic Polarization
- Irradiated NH3 (courtesy of UVa)

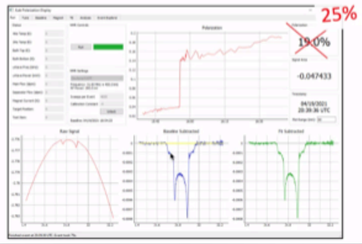


- No serious attempt to measure TE signal of ammonia sample, too slow
- Use same NMR calibration constant for butanol

➢ *75% in ~40 minutes*

Longitudinally

High Dynamic Polarization
- Deuterated-butanol + TEMPO



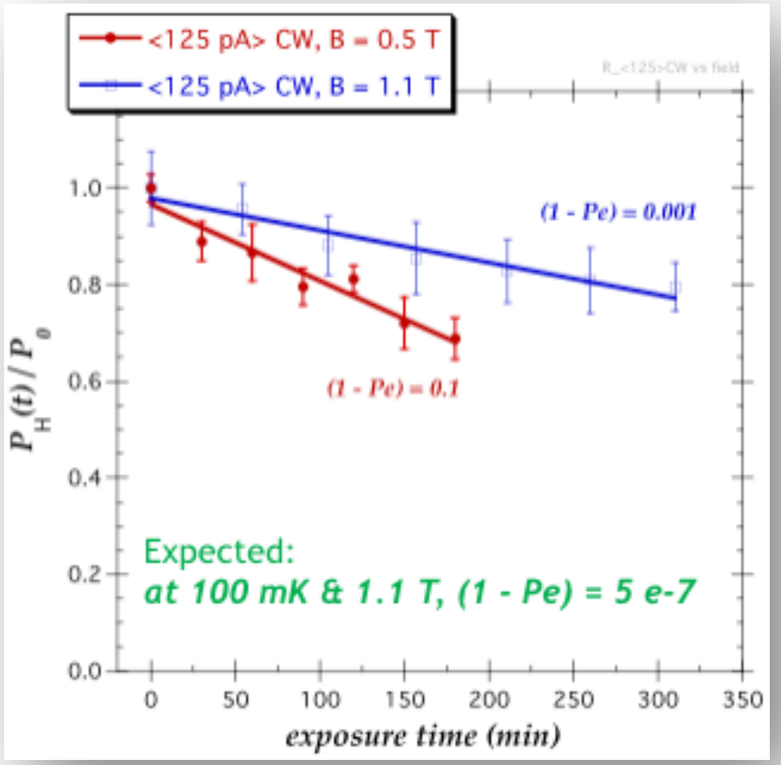
- Measuring the TE signal of d-butanol was hopeless (<0.1%)
- *Polarization can be estimated by the relative heights of the two peaks*

Credit: C.Keith, V.Burkert

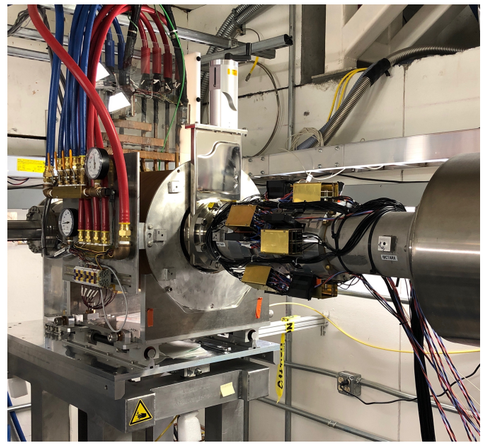
- In support of CLAS12 RG-H

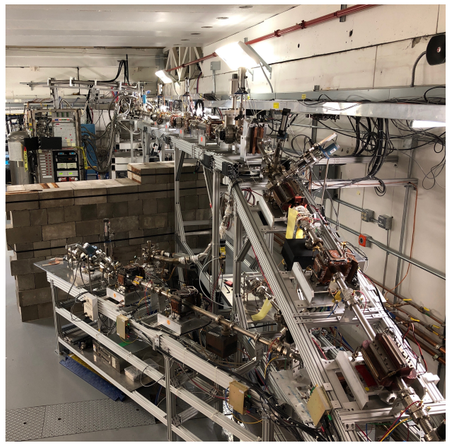
small B•dL ⇔ frozen-spin HD

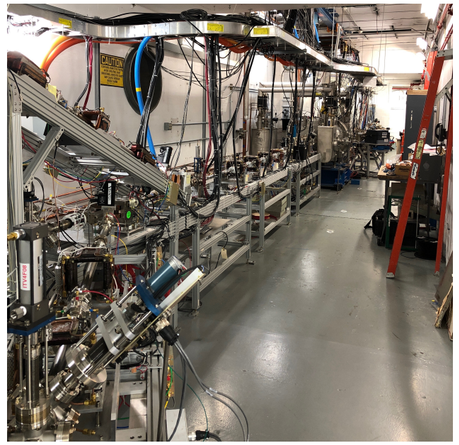
HDice target tests at UITF necessary to check depolarisation effects



Credit: A.Sandorfy, X.Wei, C.Hanretty, T.Kageya, M.Lawry


HDice In-Beam Cryostat


cave-2 elevated beam line


cave-1 with BOOSTER

Run plan
- Run 0: booster at 0.5 MeV, 1 MeV, and 10 MeV
- Run 1: commissioning (beam line) ~19 days
- Run 2: run on UNpolarized HD ~17 days
- Run 3: run on Polarized HD ~28 days
- Run 2b: calibration purpose ~10 days

- Tests between October and December 2020 (+few days in March '21)
- Data analysis is still in progress but the main conclusion was communicated to the DOE-NP

- *Depolarization of the HD sample due to a T increase*
- *initial* dP/dt slope is flat, but develops with dose

HDice UITF tests summary

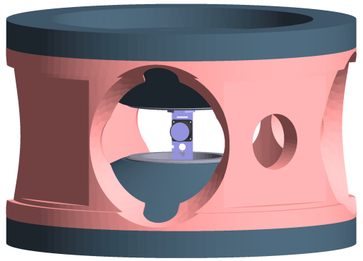
the present state of HDice is not able to support the required RG-H luminosity

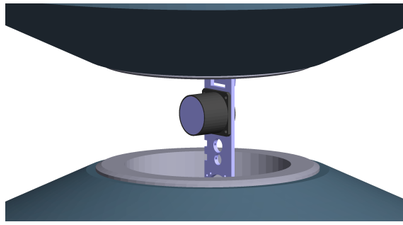
Transvere Polarized target alternatives

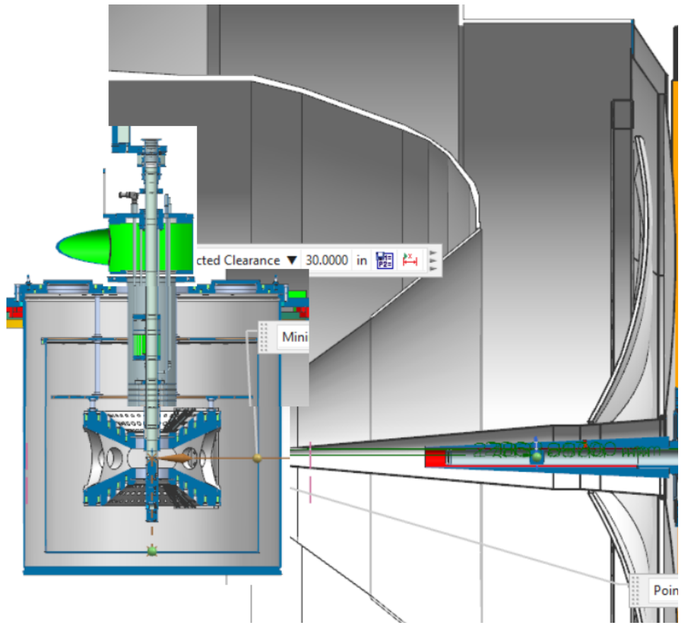
- Hall-B Task Force appointed (E.Pasyuk)
- Identified NH3/ND3 DNP target as an alternative
- Hall-A/C 5T magnet (modified) with a new 1K refrigerator
- Two additional coils will compensate the primary beam transverse tilt due to the target field
- Realistic model of the transversely polarized NH_3 and background generated by bending the primary beam
- Based on simulation, L=10^{33} $cm^{-2}s^{-1}$ achievable (room for improvement)
- Effects on approved physics program are being studied

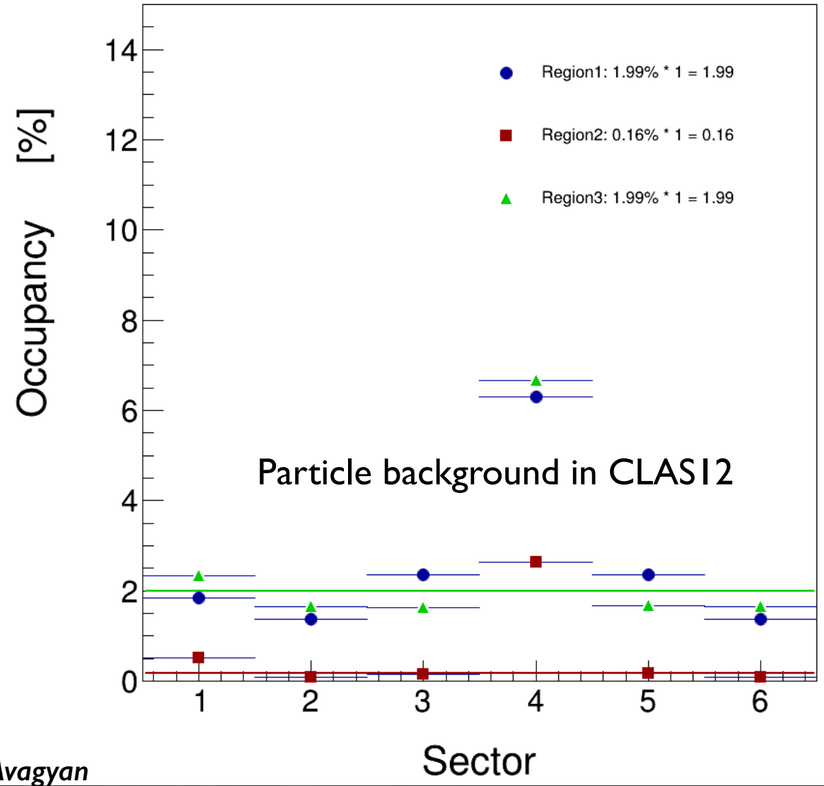
NH3 in place of HDice

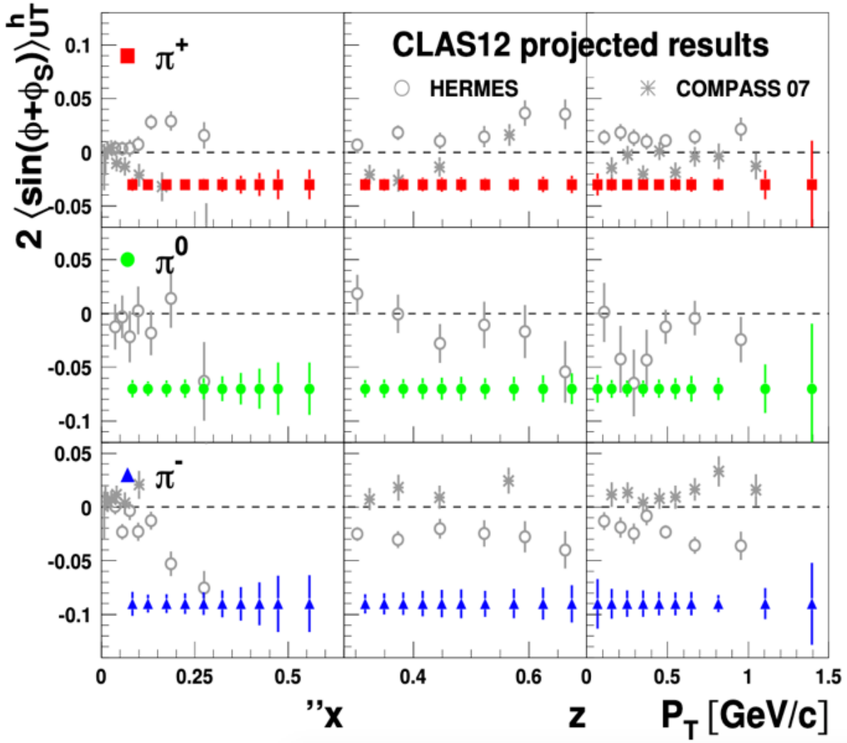
• Luminosity ($cm^{-2}s^{-1}$)	1	5
• Polarization (%)	80	60
• Dilution factor:	3/17	1/3
• CLAS12 (sectors)	5/6	6/6
• CLAS12 FT compatible	NO	YES
• CLAS12 CD	NO	NO











Projected results for SIDIS using DNP NH3 target (at the current status of exp set up optimization)

C.Keith, E.Pasyuk, S.Stepanyan, Latifa E., F.X.Girod, M.Ungaro, H.Avagyan

Proton Charge Radius — Hall B

PRad-II: a new and upgraded version of PRad-I. Awarded by PAC48 with A scientific rating (40 PAC days) with C-1 condition to remeasure the Proton Radius with a factor of 4 times better than PRad

CLAS12 RG-L (ALERT) Status — Hall B

ALERT ERR Apr. 7, 2021

Agenda [edit]

8:30-8:45 Executive Session

8:45-9:30 Overview presentation and integration in CLAS12 (Tom O'Connor) - charges 1. and 5.

9:30-9:50 The target system (Mohammad Hattawy) - charges 1.b and 6.

9:50-10:30 The Hyperbolic Drift Chamber Mechanics / Readout and physics prototypes (Julien Bettane, Gabriel Charles) - charges 1.a and 3.c

10:30-10:45 Coffee Break

10:45-11:30 The ALERT TOF (Whitney Armstrong) - charges 1.c, 2. and 3.c

11:30-11:45 Safety, radiations and documentation (Gabriel Charles) - charges 3.a., 4., 7., 9. and 11.

11:45-12:15 Simulations, software and computing (Michael Paolone) - charges 3.b, 3.d and 10.

12:15-12:45 Schedule and organization (Raphael Dupre) - charges 1., 8. and 10.

12:45-14:00 Working Lunch

14:00-17:00 Executive Session

17:00 Closeout

Main Recommendations from ERR (and focus of current efforts):

1) TOF:

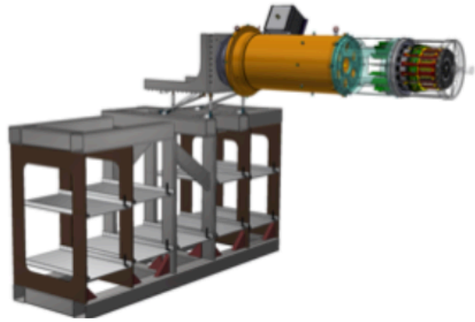
- Construct a prototype of one TOF module (with all 4 30-cm-long scintillator paddles and 40 scintillator wedges) including the SiPMs - demonstrate that light output is sufficient to achieve the expec
- readout electroni

2) HDC:

- Provide a plan tha
- prototype chamb
- Implement these

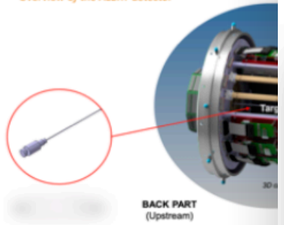
3)Radiation:

- Perform realistic



Overview of the mechanical design

Overview of the ALERT detector



CLAS12 ^{3}He polarized target for CLAS12 — Hall B

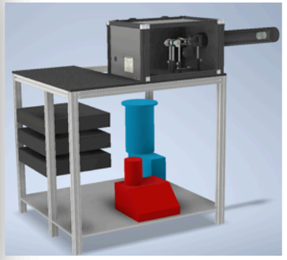
Motivated by the significant interest expressed by PAC48 (and C1- A- proposal rating!)

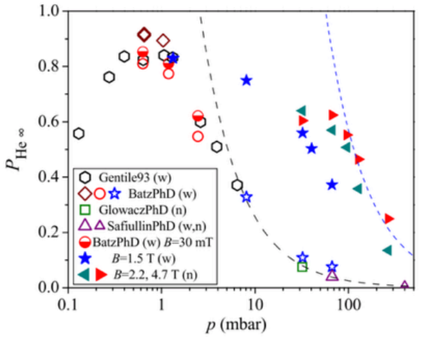
- Target Group, Hall-B and MIT join R&D activity lead by J.Maxwell to demonstrate the technical feasibility
- Proposed work plan
  - Establish and explore high-field MEOP at JLab
  - Map polarization performance vs pressure, magnetic field)
  - Start with experience from MIT-BNL
    - Understand gas transfer between cells (Diffusion sufficient? Controlling convection)
    - Understand depolarization in beam (Relaxation higher with increased pressure, lower with increased field Final answer will require beam on target

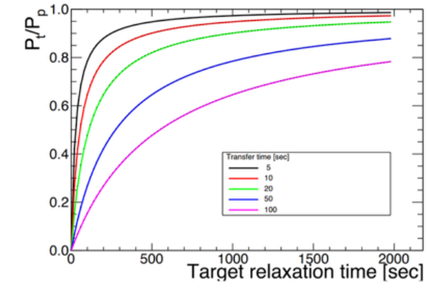
Three Year Plan

- Year 1: Using minimal equipment and space, address two topics:
  - High field polarization at RT, range of pressure and field
  - Gas transfer between cold and RT cells
- Year 2, 3: Build working prototype
  - Need pulse-tube, cryostat, dedicated lab space, more personnel
  - Explore performance of full system
  - Designed to allow simple upgrade to beam-ready system
- Beyond: In-beam tests in UITF
  - Measure in-beam relaxation at high field

MEOP Test Stand







Credit: J.Maxwell, R.Milner, Dien Nguyen, C.Keith, H.Avagyan

CLAS12 Hi-Luminosity

Summary: Goals for the Upgrades

- **Stage-1:** Achieve luminosity of $2\times10^{35} cm^{-2} sec^{-1}$ for normal CLAS12 running with charged particle reconstruction efficiency of >85%

Can be achieved within 3 years with budget of $~2M.

- Stage-2: Define a configuration of CLAS12 operations for two orders of magnitude higher luminosity, $> 10^{37} cm^{-2} sec^{-1}$

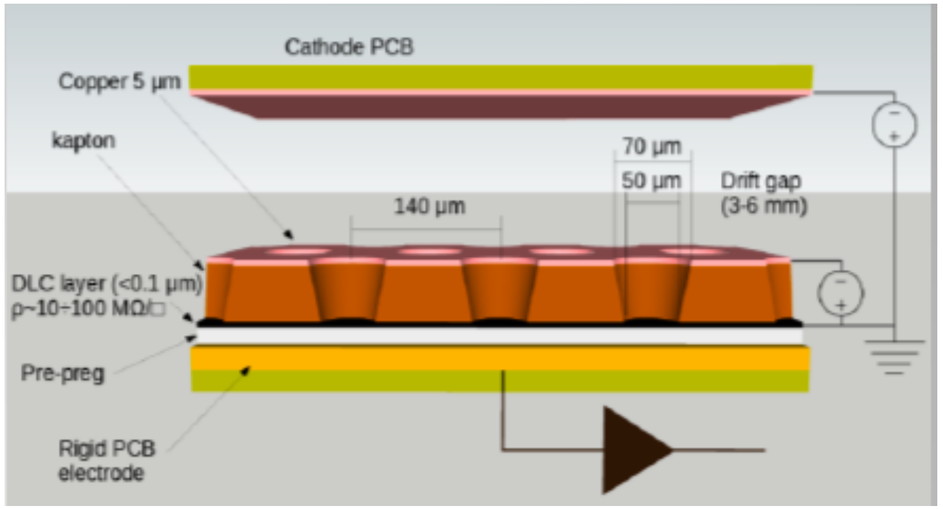
More MC studies, detector R&D and engineering are needed. TF conclusion, can be done in 7-10 years time frame with under $10M budget.

CLAS12 at Hi-Lumi Task Force (PI: S.Stepanyan)

- CLAS12 Hi-Lumi in the lab agenda
- Two-stages work-plan: at first 2xL and second: 100xL
- Focus on Stage I: Achieve luminosity of ~ $2x10^{35}$ $cm^{-2}s^{-1}$ for normal running conditions of CLAS12 with charged particle reconstruction efficiency of > 85%
- new tracker (GEM, uRwell) to replace DC (+improved FE electronics)
- Preliminary work plan aiming to develop a detector in ~1y time and test it on-beam in CLAS12

μ-RWELL features:

- Compactness
- Easy assembly
- Easy powering
- Intrinsic spark quenching



DAQ upgrade up to 100kHz event rate

- Trigger-based mode is used
- FADC250, DCRB, VSCM, SSP boards will stay
- CAEN TDCs have to be replaced with VETROCs, VME crates to be converted to VXS
- MM readout to be decided, proposed solution is new VMM3 ASIC based board, work in progress with MM team
- SVT ASIC performance have to be validated for high luminosity running
- Some VTPs have to be used as both trigger and readout modules, firmware under development (reason is limited VME readout bandwidth)
- Some boards firmware and CODA software have to be validated and may need to be modified/fixed
- CODA software (EB in particular, also ET and ER) have to be able to process higher rate, may need improvements
- Work can be performed in steps, with partial performance improvement on every step
- Time scale 2 years

DAQ upgrade to streaming

- VTP, FADC250, DCRB, VSCM, SSP, VETROC boards can be reused, or/and new non-vxs based electronics can be used
- Exact streaming DAQ configuration for CLAS12 to be decided during following years based on available technology
- All new electronics development (ASICs etc) have to be compatible with streaming mode
- New streaming version of CODA is needed – not available at current time, switching to streaming DAQ can be considered only when back-end is available or close to become available
- Time scale 3-5 years depending on demand

Front-end electronics upgrade to streaming mode is underway, no serious problems anticipated

CLAS12 Future DAQ Task Force (PI: S.Boyarinov)

- Stage I: upgrade the current triggered DAQ to sustain 100 kHz event
- Stage II: upgrade to full Streaming Read Out

Credit: S.Stepanyan, S.Boyarinov

Proposal ID	Hall	Title	Contact Person		Days	Topic
Letters of Intent						
LOI12-21-001	C	3N Short-Range Correlations	Nadia Fomin	fomin@jlab.org	n/a	5
LOI12-21-002	A	Measurement of the Tensor Observable Azz using SoLID	Elena Long	elena.long@unh.edu	19	5
LOI12-21-003	B	Exploring fundamental properties of 3He through the 3He(e,e'd) process in CLAS12	Douglas Higinbotham	doug@jlab.org	n/a	5
LOI12-21-004	A	Measurement of the Deuteron Tensor Structure Function b1 with SoLID	Karl Slifer	karl.slifer@unh.edu	17	3
Conditional						
C12-19-002	A	High accuracy measurement of nuclear masses of Lambda hyperhydrogens	Toshiyuki Gogami	gogami@jlab.org	14.5	5
New Proposals						
PR12-21-001	C	Measurement of the neutron charge radius through the study of the nucleon excitation	Nikos Sparveris	sparveri@temple.edu	9.5	2
PR12-21-002	A	First Measurement of the Flavor Dependence of Nuclear PDF Modification Using Parity-Violating Deep Inelastic Scattering	John Arrington	johna@jlab.org	81	5
PR12-21-003	B	A Direct Detection Search for Hidden Sector New Particles in the 3-60 MeV Mass Range	Ashot Gasparian	gasparan@jlab.org	60	
PR12-21-004	B	Semi-Inclusive Deep Inelastic Scattering Measurement of A=3 Nuclei with CLAS12 in Hall B	Larry Weinstein	weinstei@jlab.org	58	1
PR12-21-005	A	Double Spin Asymmetry in Wide-Angle Charged Pion Photoproduction	Bogdan Wojtsekhowski	bogdanw@jlab.org	n/a	4
PR12-21-006	A	Measurement of the Asymmetry A^{e+e-}_d between e^+-^{2}H and e^-- ^{2}H Deep Inelastic Scattering Using SoLID and PEPPo at JLab	Xiaochao Zheng	Xiaochao@jlab.org	104	6
New Run Group Proposal						
PR12-21-007	A	TDIS-n: Tagged DIS Measurement of the Neutron Structure Function	Arun Tadepalli	arunts@jlab.org	27	3

Summary

- 2020/21 was not an easy year (COVID-19 pandemic) but we were able to run the Hall-B physics program
  - RG-F (BONUS) - concluded
  - HDice test @ UITF - concluded
  - SAD activity progressing to restore physics beam in August - in progress
- Preparing to run HPS and RG-M in CY 2021 and RG-C in 2022
- RG-A/RG-B/RG-K/RG-F data calibration and reconstruction (Pass1 almost completed, preparing Pass2)
- Data Analysis: first CLAS12 PRL (!), the second is with PRL referees, … and many more in preparation
- Data mining: CLAS results published on Nature and Nature Physics
- On a longer range, preparing the future experiments (RG-H and other RGs) and the HI-LUMI operations of the CLAS12 detector
- In preparation for PAC49: two new proposals and one LoI
- Hall-B will be a significant player in JLab future plans (hi-lumi and hi-energy upgrades) with a great potential for an extended and new physics program beside the well established 12 GeV physics program