

Welcome to Hall B

- Introduction
- Status of Run Preparations
CLAS12 / PRad / HPS
- Scheduling

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Mar 12, 2025



News from the Group



User Visits

- **Single point-of-contact** for Hall B visitors is admin support Chris Ross (cross@jlab.org)
- **New User Visit Initiation Form** from Hall B staff to help, but not required by JLab
- Ladder (SAF307) and Basic Electrical (ESC001) Safety **Trainings** required for work in Hall-B
- New regulations require **ePAS permits** before work commences (*Electronic Permit Administration System* for work permits, risk assessments, job hazard analyses, etc.)
- New regulations require **pre-job briefings** for every work task that is performed
- All documentation needs to be submitted **7 days in advance** of the visit, also for meetings
- Every visitor must **check in and check out** with their hosts upon arrival and ending the visit

Dates

Work tasks

Trainings

ePAS

Support

Responsibilities

Hall B User Visit Initiation Form

- Name (First, Last):
- Email:
- Institution:
- Position:
- Planned dates on-site at JLab:

Visit details: List primary work tasks and required JLab training:

Active JLab training:

<input type="checkbox"/> GEN034 Annual Security Awareness	<input type="checkbox"/> SAF116kd Physics Div. Work Governance	<input type="checkbox"/> CST001 Cyber Security Awareness	<input type="checkbox"/> SAF801T Radiation Worker I
<input type="checkbox"/> SAF111 EH&S Orientation	<input type="checkbox"/> SAF103 Oxygen Deficiency Hazard	<input type="checkbox"/> SAF111 Hall B Safety Awareness	<input type="checkbox"/> ESC001 Basic Electrical Safety
<input type="checkbox"/> SAF801kd General Access RWP	<input type="checkbox"/> SAF307 Ladder Safety	<input type="checkbox"/> Other <input type="text"/>	Fill out box

Applicable ePAS permits associated with each task:

ePAS permits that need to be prepared to support the work tasks:

Required site access:

Requested Support from JLab:

- Visitor must register for Site Access using the following link: <https://misportal.jlab.org/jlabAccess/>
- Visitor must check-in with host before work begins and check-out with host upon ending visit
- All work tasks require pre-job briefing before starting
- Applicable ePAS permits must be signed by visitor before work begins

Hall-B Group

- Currently **35** positions in Hall B Group including small Spin-Polarized Fusion team + **2** Joint Appointments with CNU
- Hiring:
 - Postdoc on AI/ML developments
- Under preparation:
 - Renewal Joint Appointment with Duke
 - New Joint Appointment with Lamar

Group Leader

Achenbach, Patrick

Scientific Staff

Avagyan, Harut

Baltzell, Nathan

Boyarinov, Sergey

Burkert, Volker

Cao, Tongtong

Carman, Daniel

De Vita, Raffaella

Dilks, Christopher

Elouadrhiri, Latifa

Gavalian, Gagik

Gotra, Yuri

Hauenstein, Florian

Kubarovsky, Valery

Mokeyev, Viktor

Paremuzyan, Rafayel

Pasyuk, Eugene

Sharabian, Youri

Stepanyan, Stepan

Ungaro, Maurizio

Wei, Xiangdong

Ziegler, Veronique

Post Docs

Liyanaarachchi, Sara

Tyson, Richard

Singh, Bhawani

Joint Appointments

Hedde, David (CNU)

Phelps, William (CNU)

Admin. Support

Ross, Christopher

Engineering Staff

Dobrenz, Phillip

Miller, Robert

Designer Staff

Guthrie, Chris

Technical Staff

Bruhweil, Krister

Cook, Morgan

Docherty, Steve

Insley, Denny

Mealer, Calvin

Tucker, Dontre

Williams, Donald

Status of Run Preparations



General Hall-B Status

- Expecting beam for physics with ALERT from **24 Mar to 7 Sep, 2025**
- **PRad-II/X17 Experiments** are tentatively and conditionally scheduled for Spring 2026
- Hall B has recovered from a **safety incident** on 14 Feb, 2025 (the first incidence since years)



Safety Flash Alert:

Hall B Electrical Shock

On Friday, Feb. 14, an employee working in Hall B was shocked while replacing a band heater on the torus service tower. The access space was very tight, with limited visibility and mobility to work. The employee was unaware that the area where the heater was located was fed by multiple power sources. The employee immediately reported the event to their co-worker, and they were driven to Occupational Medicine for evaluation and released back to work without restrictions.

What We Require You To Do:

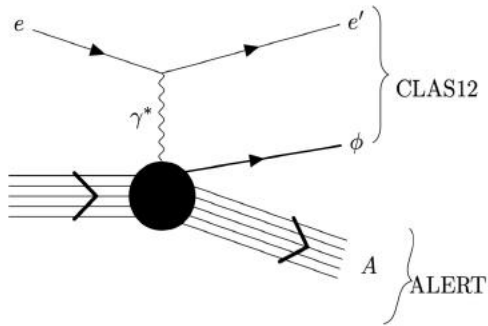
- During the work-planning process, ensure that you have considered what to do in case of an incident, so mitigations are established.
- Ensure non-Nationally Recognized Testing Laboratory (NRTL) equipment is inspected prior to use and equipment with multiple energy sources are appropriately labeled. Contact [John Riesbeck](#), Electrical Authority Having Jurisdiction, for more information.
- Always perform a voltage verification on the workspace before starting your work.
- Ensure that you are both mentally and physically fit for duty, regardless of the time pressures.

What We Have Done:

- Work was paused in Hall B.
- Timely fact-finding was conducted.
- Comprehensive review of work planning and controls took place.
- Prepared new work-planning documents to address controls for multiple hazardous energy sources.

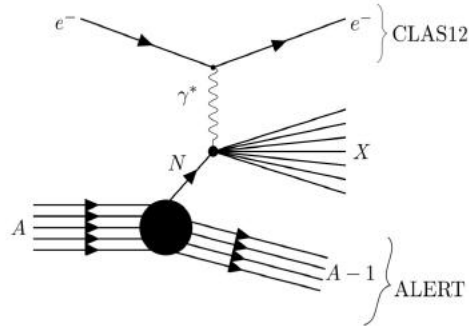
ALERT Run Group

Proposal	Physics	Exp. Contact	Rating	PAC	Group Days	Equip-ment	Energy	Group Contact	Target
E12-17-012	Partonic structure of light nuclei	Z. Meziani	A-	45	55	CLAS12 ALERT	11	L R. Dupré	High pressure gaseous H, D, ⁴ He
E12-17-012A	Tagged EMC measurements on light nuclei	R. Dupré		45					
E12-17-012B	Spectator-tagged DVCS on light nuclei	W. Armstrong		45					
E12-17-012C	Other physics opportunities with ALERT	R. Dupré		45					
E12-23-013	Measuring short-range correlations with ALERT	F. Hauenstein	A	51	17	6.6	F. Hauenstein		



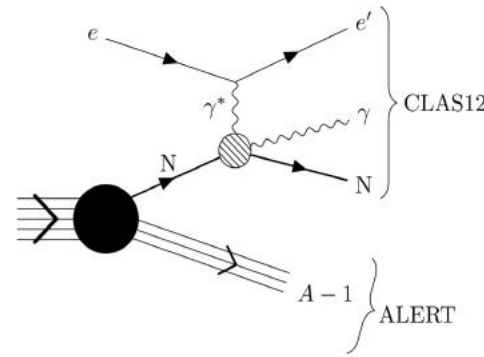
Coherent Processes on ⁴He

- $^4\text{He}(e, e'\gamma)^4\text{He}$
- $^4\text{He}(e, e'\phi)^4\text{He}$



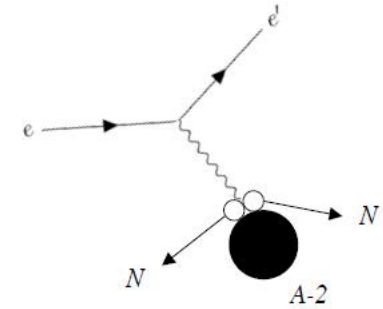
DIS on ⁴He and ²H:
Tagged EMC Effect

- $^4\text{He}(e, e'^3\text{H})X$
- $^4\text{He}(e, e'^3\text{He})X$
- $^2\text{H}(e, e'p)X$



Incoherent Processes
on ⁴He and ²H

- $^4\text{He}(e, e'\gamma p^3\text{H})$
- $^4\text{He}(e, e'\gamma^3\text{He})n$
- $^2\text{H}(e, e'\gamma p)n$



Short Range Correlations
on ⁴He

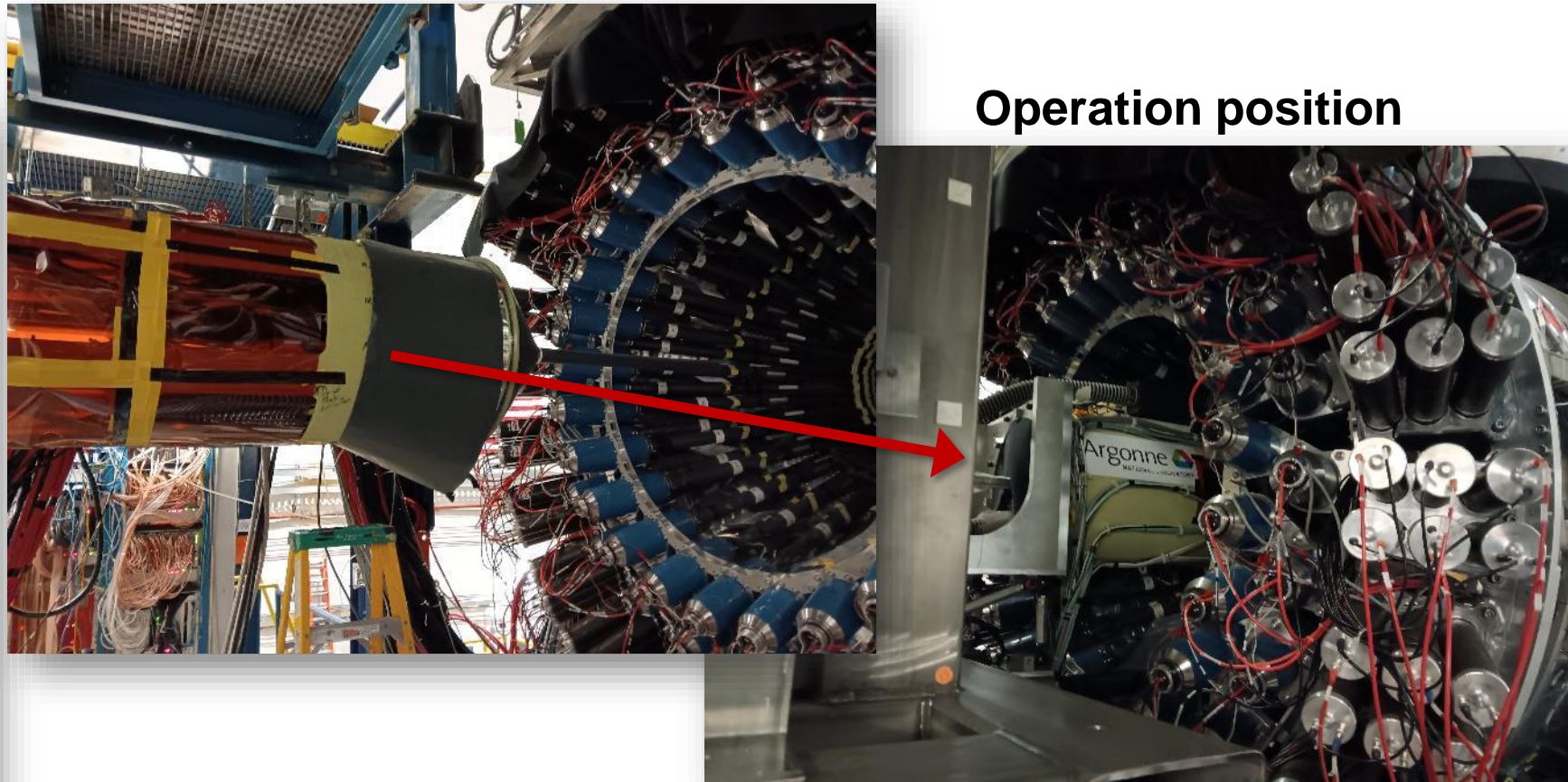
- $^4\text{He}(e, e'pd)n$
- $^4\text{He}(e, e't)p$
- $^4\text{He}(e, e'p)$

ALERT Detector Status

Maintenance position



Operation position



ALERT detector is ready for the run

Current ALERT Run Schedule

SAD or scheduled Run Group	Setup / Status	Target	Beam Energy	Start Date	End Date	Scheduled Calendar Days	Remaining PAC Days Before Run	Scheduled PAC Days = Cal.Days/2	Actual PAC Days from ABUs	Remaining PAC Days After Run
SAD 2024				2024-05-19	2025-03-07	292				
RG-L	ALERT	high pressure gas	2.1	2025-03-24	2025-03-31	7	55	4		52
	pass change			2025-03-31	2025-04-01	1				
RG-L	ALERT	high pressure gas	11	2025-04-01	2025-07-18	108	52	54		-3
	pass change			2025-07-18	2025-07-19	1				
RG-L	ALERT	high pressure gas	2.1	2025-07-19	2025-07-21	2	-3	1		-4
	pass change			2025-07-28	2025-07-29	1				
RG-L	ALERT	high pressure gas	6.6	2025-07-29	2025-09-04	37	17	18.5		-1.5
SAM 2025	reconfigure	change				157	sum:	77		

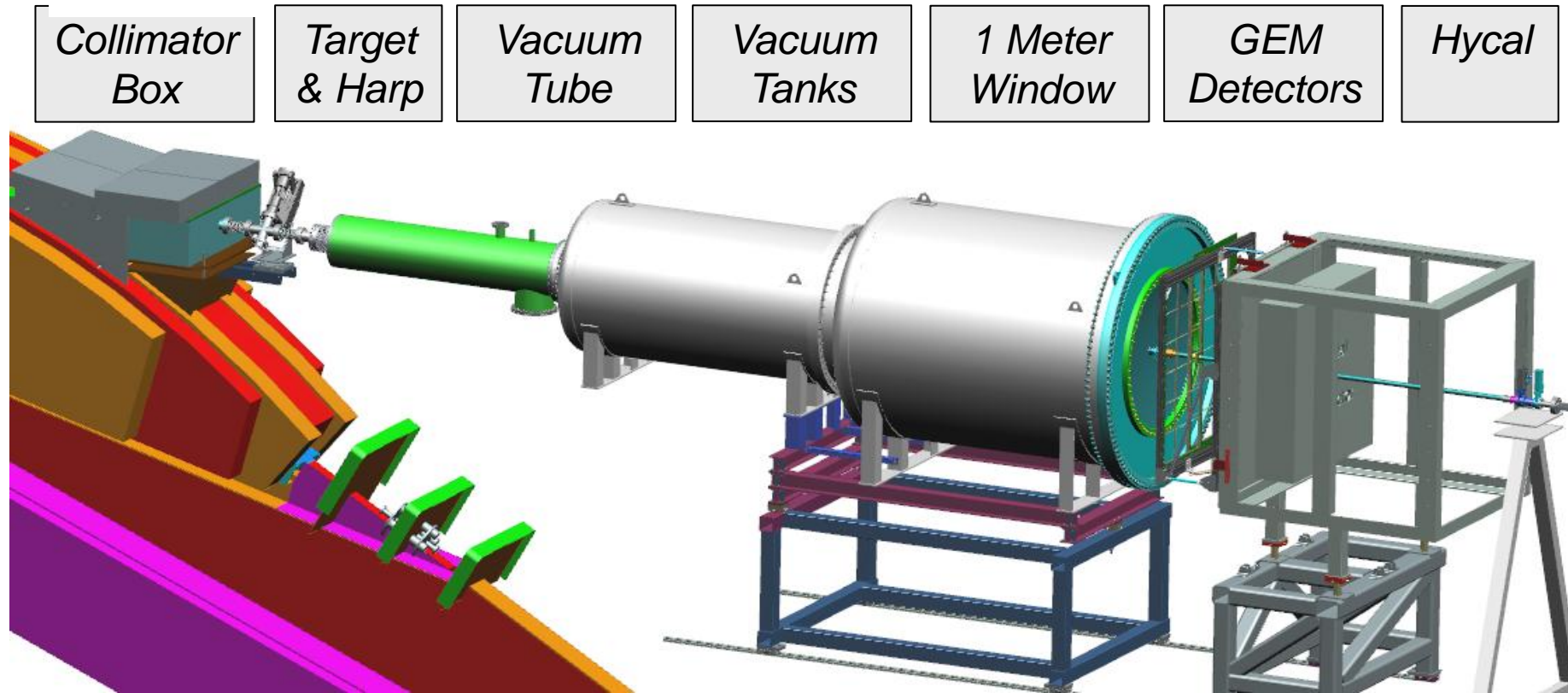
Near-Term Run Schedule

- In FY26, Hall C plans a program that requires reducing energy gain to around **700 MeV/pass** to get to special kinematics, currently scheduled for about 40 PAC days
- **Experiment Readiness Review for PRad-II/X17 on 9 May, 2025**
 - (A) If PRad-II and X17 Search experiments pass the ERR:**
 - Low beam energies fit well with experimental requirements
 - Low beam energies will not be available during the years of MOLLER running
 - Consequently, these experiments will run in FY26
 - (B) If PRad-II and X17 Search experiments will not pass the ERR:**
 - About 50 PAC days for standard beam energies would be available
 - The cryotarget could be installed in Hall B during SAM 2025 for RG-A or B or E or K
 - About 40 PAC days for low beam energies would be available
 - There are **10 PAC days left for RG-M** to run with 1.1 GeV beam energy
 - The only other approved Hall B experiment for low beam energies is HPS

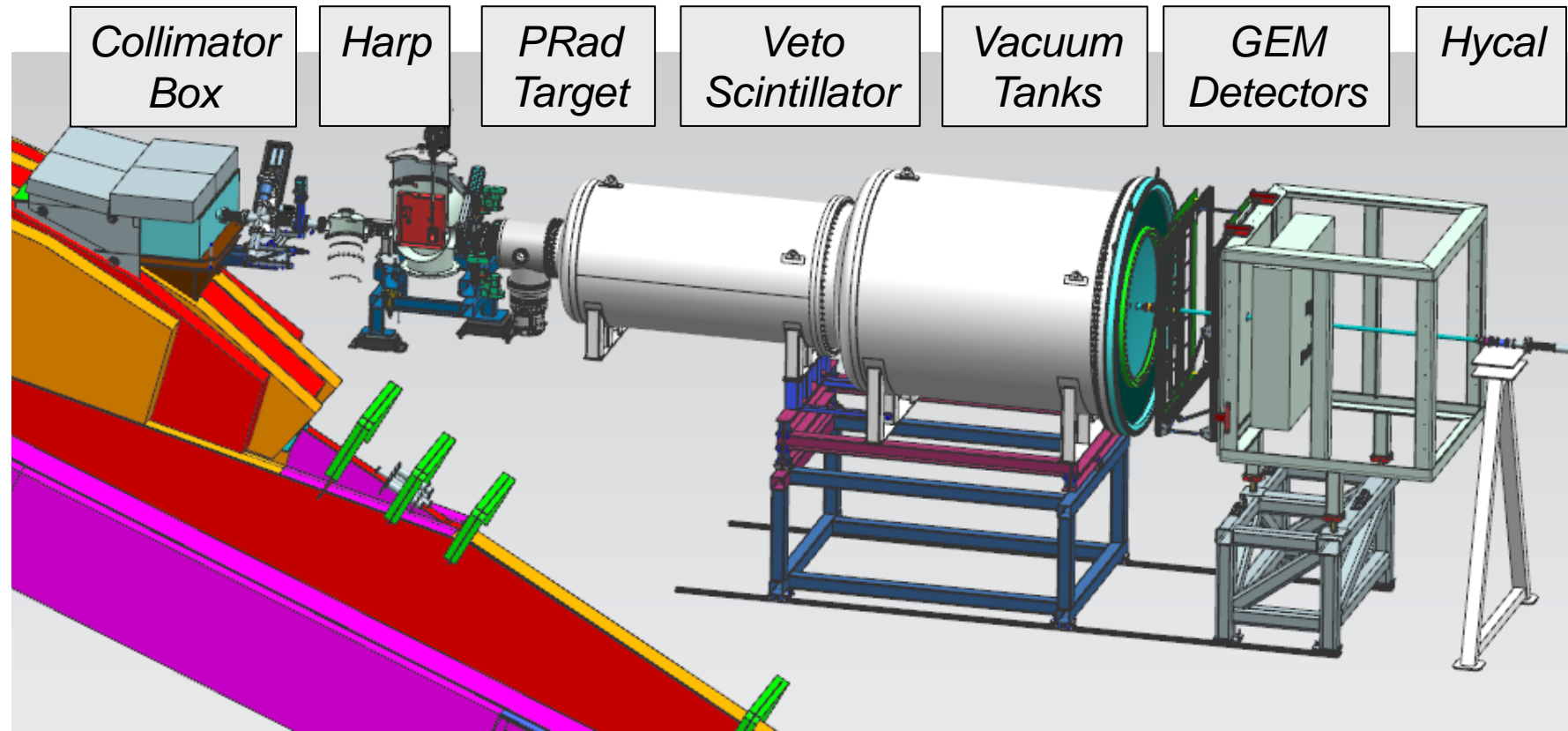
Calorimeter Setup in Hall B for X17 Search

- Hall B Photon Tagger for PbWO_4 calorimeter calibration
- Large vacuum box to minimize scattering
- Two planes of GEM detectors for tracking
- HyCal Calorimeter for electrons and gammas
- For X17 specific: $1 \mu\text{m Ta}$ ($2.4 \times 10^{-4} X_0$) thin foil targets

Background-minimized
very-forward detector

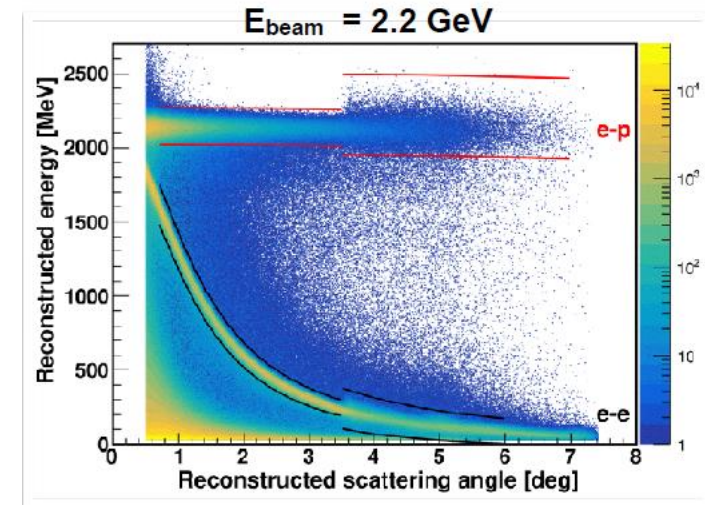
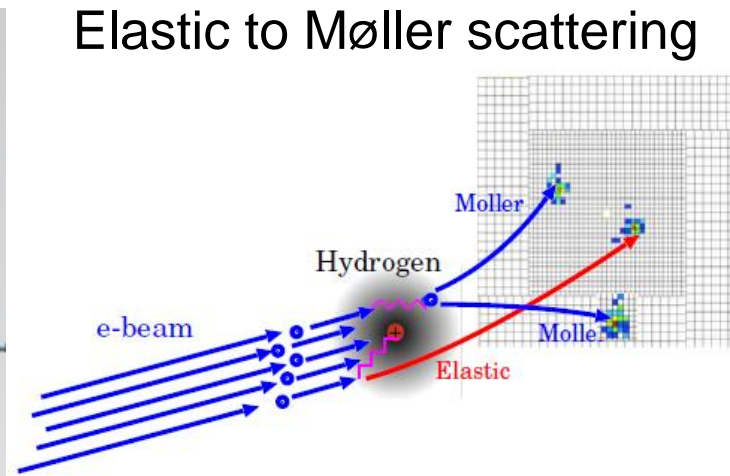


Calorimeter Setup in Hall B for PRad-II



This experimental design:

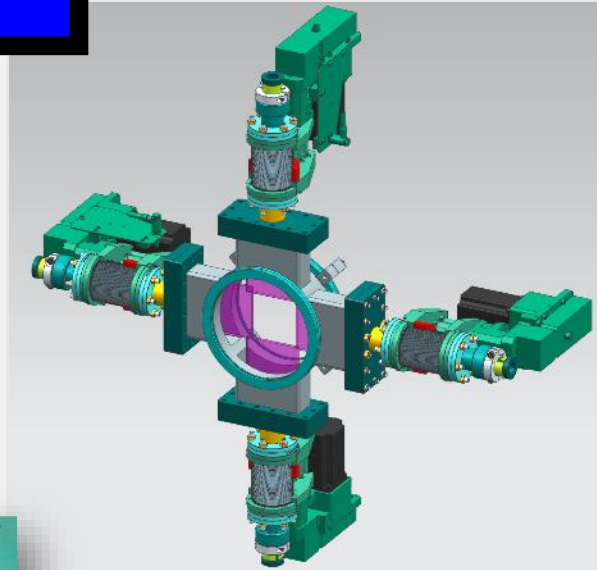
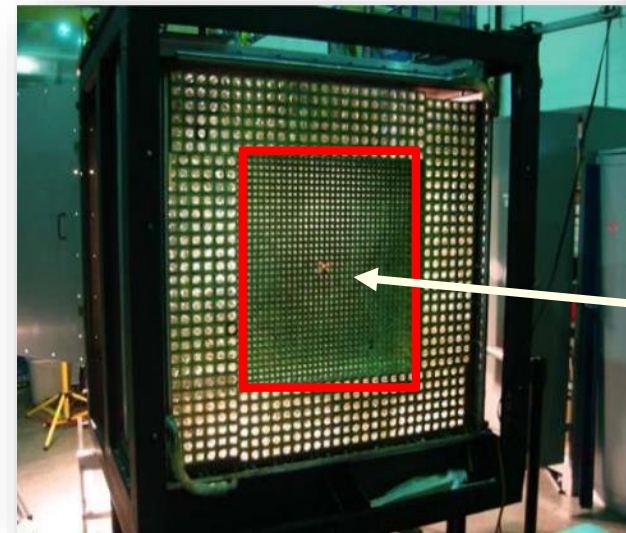
- Allows control of systematics
- Eliminates need to monitor luminosity



Data from PRad Collaboration

PRad-II/X17 Run Preparations at JLab

- **New scintillator system** designed and constructed at JLab
- **Beam-lines** for PRad2/X17 designed; **Vacuum box** inspected
- **HyCal** is being refurbished and tested channel-by-channel
- **HyCal electronics** is procured (based on new fADC-250 modules)
- **PRad windowless gas flow target** is tested on site



Near-Term Conditional Run Schedule

SAD or scheduled Run Group	Setup / Status	Target	Beam Energy	Start Date	End Date	Scheduled Calendar Days	Remaining PAC Days Before Run	Scheduled PAC Days = Cal.Days/2	Actual PAC Days from ABUs	Remaining PAC Days After Run
PRad-II/X17	HyCal/GEMs	Radiator	2.2	2026-01-23	2026-02-02	10	60	5		55
X17 search	HyCal/GEMs	Ta foil	2.2	2026-02-02	2026-04-24	81	55	41		15
	reconfigure	change		2026-04-24	2026-05-01	7				
PRad-II	HyCal/GEMs	H2 gas	2.1	2026-05-01	2026-05-30	29	40	15		26
	pass change			2026-05-30	2026-05-31	1				
PRad-II	HyCal/GEMs	H2 gas	0.7	2026-05-31	2026-06-13	13	26	7		19
	pass change			2026-06-13	2026-06-14	1				
PRad-II	HyCal/GEMs	H2 gas	3.5	2026-06-14	2026-07-20	36	19	18		1
SAM 2026					sum:	178		sum:	85	

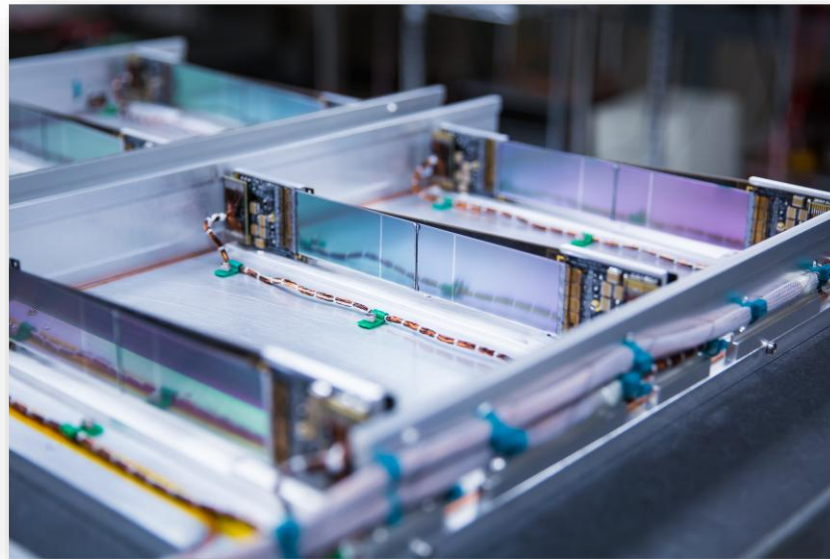
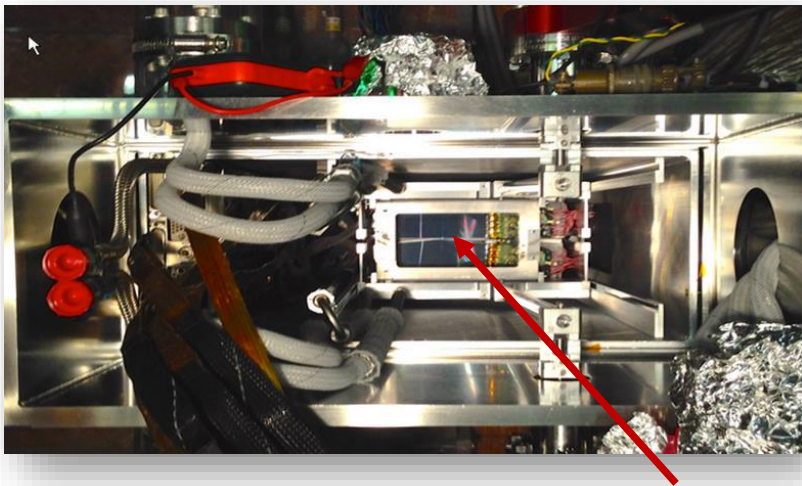
Mid-Term Possible Run Schedules

SAD or scheduled Run Group	Setup / Status	Target	Beam Energy	Start Date	End Date	Scheduled Calendar Days	Remaining PAC Days Before Run	Scheduled PAC Days = Cal.Days/2	Actual PAC Days from ABUs	Remaining PAC Days After Run
RG-E		liq. D2 & nucl. doublet	11			66	33	33		0
	reconfigure	change				7		4		
RG-K		liq. H2	8.8			120	52	60		0
sum:								97		

SAD or scheduled Run Group	Setup / Status	Target	Beam Energy	Start Date	End Date	Scheduled Calendar Days	Remaining PAC Days Before Run	Scheduled PAC Days = Cal.Days/2	Actual PAC Days from ABUs	Remaining PAC Days After Run
RG-E		liq. D2 & nucl. doublet	11			66	33	33		0
	reconfigure	change				7		4		
HPS	HPS setup	nuclear	4.4			120	105	60		45
sum:								97		

Update on HPS

- **SIMS analysis from 2016 data:** reach in uncharted regions of **dark meson** parameter space
- **SVT alignment for 2021 data** in good shape
- Beam background merging implemented in MC instead of CPU-intensive simulations



- **Preparations for a new run:**
 - New FEB fabrication in progress after validation of two boards
 - Issues with cutting edges of slim sensors
 - Setup optimization for running beam on target without chicane magnets for alignment

Summary

- **ALERT is ready for the upcoming run**
- **Near-term schedule will be announced after PRad-II/X17 ERR on May 9, 2025**
- **Mid-term schedule should be announced in July 2025**