

# HALL-A STATUS REPORT

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Hall A Collaboration Meeting

December 8-10, 2010

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Thomas Jefferson National Accelerator Facility

# Publications (incl. submissions) in 2010

- A. Shahinyan et al., The Electromagnetic calorimeter in JLab Real Compton Scattering Experiment, resubmitted to NIMA, arXiv:0704.1830
  - I. Pomerantz et al., Hard Photodisintegration of a Proton Pair, PLB 684, 106 (2010), 0908.2968 [nucl-ex]
  - M. Coman et al., Cross Sections and Rosenbluth Separations in  $^1\text{H}(e,e'K^+)\Lambda$  up to  $2.35\text{ GeV}^2$ , PRC 81, 052201 (2010), 0911.3943 [nucl-ex]
  - M. Paolone et al., Polarization Transfer in the  $^4\text{He}(e,e'p)^3\text{H}$  Reaction at  $Q^2 = 0.8$  and  $1.3\text{ GeV}^2$ , PRL 105, 072001 (2010), 1002.2188 [nucl-ex]
  - J. Glister et al., Polarization Observables in Deuteron Photodisintegration below 360 MeV, submitted to PLB, 1003.1944 [nucl-ex]
  - S. Riordan et al., Measurements of the electric form factor of the neutron up to  $Q^2=3.4\text{ GeV}^2$  using the reaction  $^3\text{He}(e,e'n)pp$ , accepted by PRL, 1008.1738 [nucl-ex]
  - Y. Qiang et al., Properties of the  $\Lambda(1520)$  resonance from high-precision electroproduction data, PLB 694, 123 (2010)
  - X. Zhan et al., New measurement of the proton's size and structure using polarized photons, submitted to Science
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- Total number of Hall A publications: Science 1(+1), PRL+PLB 43(+1), PRC 18, NIM 18(+1)
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- Hall A has been running now for 13 years, with an average publication output of ~6
  - However, CLAS publishes 10-12 papers annually!!!!
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- Top cited Hall A publications: 1 500+, 1 250+, 6 100+, 17 50+



# PUBLICATIONS-II

- Archival papers promised to be completed **LAST** year:
- E89-044  $^3\text{He}(e,e'p)$  Fatiha and Arun working
  - E91-026 deuteron A and B next spring (??)
  - E94-010 GDH Karl Slifer working
  - E99-007  $G_E^p$ -II Andrew Puckett nearly completed reanalysis
  - E99-114 WACS Bogdan
  - E01-001 Super-Rosenbluth Issam working
  - E94-107 Hypernuclear
  - E99-115 HAPPEX-II Bob working

PLEASE COMPLETE THESE PUBLICATIONS ASAP!!



# PUBLICATIONS-III

- Standard publications in draft form for too long:
  - E97-111  $^4\text{He}(e,e'p)$  (Doug?)
  - E99-115 Transverse SSA (David A)
  - E97-110 SAGDH (Vince writing)
  - E01-020 Deuteron Electrodisintegration (last summer?)
- Circulating, soon to be submitted (!?)
  - E05-004  $A(Q)$  at low  $Q^2$
  - E04-018 Elastic Scattering off  $^3,^4\text{He}$  (??)
  - E00-102  $^{16}\text{O}(e,e'p)$  (Joaquin working on two papers)
  - E06-007  $^{208}\text{Pb}(e,e'p)$  (Joaquin working)

PLEASE COMPLETE THESE PUBLICATIONS ASAP!!

THE CC IS SENDING OUT MONTHLY REMINDERS



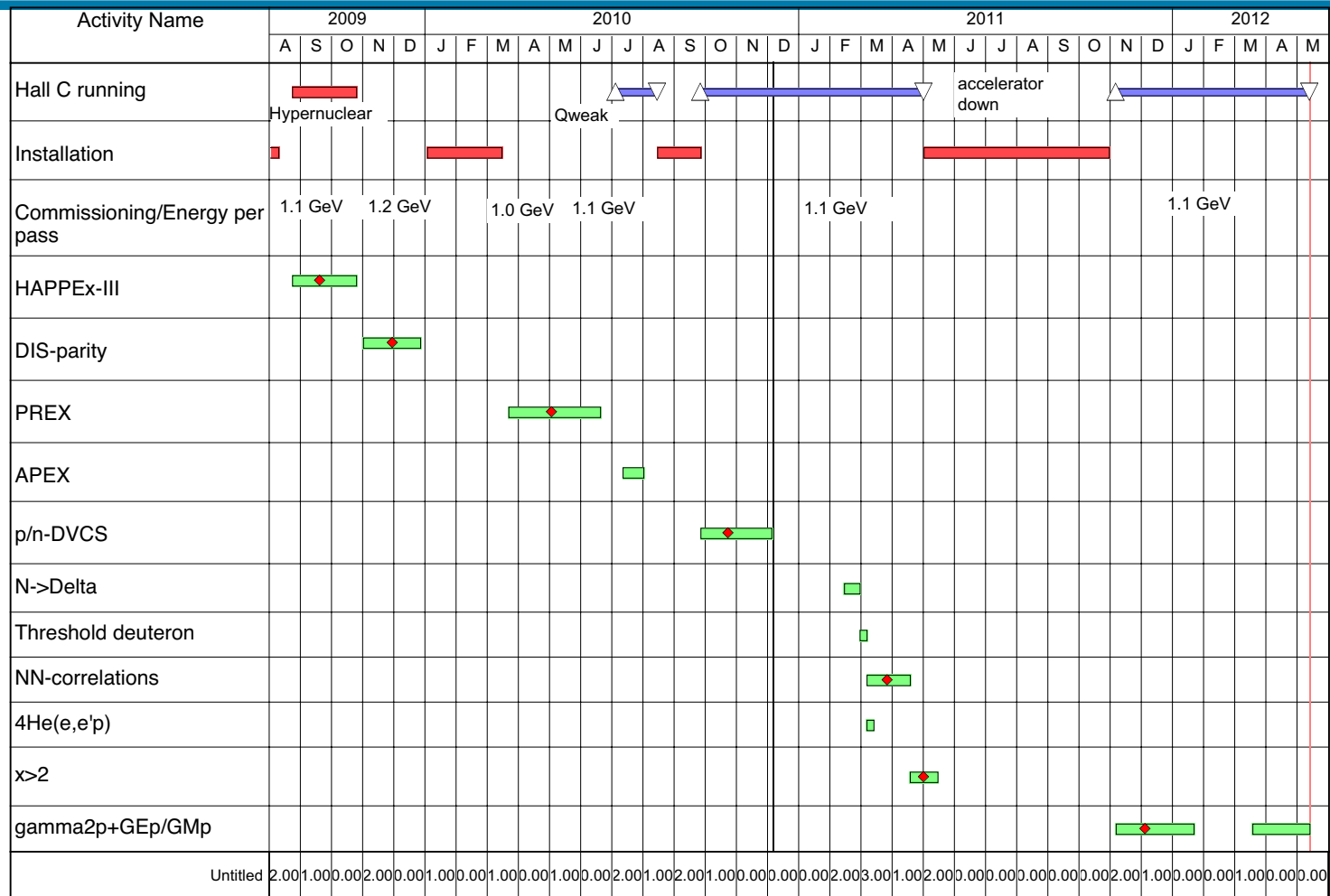
# Scheduled Experiments in Hall A

<u>Exp</u>	<u>Title</u>	<u>Contact persons</u>	
Dec	p/n-DVCS	Carlos Munoz Camacho	
Jan/Feb	BigBite Installation		
Feb	E08-010	N→Delta	Nikos Sparveris
Feb/Mar	E08-008	Threshold Deuteron	Blaine Norum
Mar	E08-009	$^4\text{He}(e,e'p)$	Arun Saha
Mar/Apr	E07-006	SRC in Triple Coincidence	Eli Piasetzky
Apr/May	E08-014	x>2 Short-Range Correlations	Patricia Solvignon
May-Nov	g2p/GEp Installation		

- After a difficult start DVCS is running well
- The time required for the installation of BigBite has forced to significantly reduce the running time for the deuteron threshold photo-disintegration experiment (E08-008)
- DOE has provided most of the funding required for the two A-rated experiments E08-027 ( $g_2^p$ ) and E08-007 ( $G_E^p/G_M^p$  at very low  $Q^2$ ). The Hall C SC magnet for the polarized target has been repaired at Oxford and the design is progressing well
- A new estimate of 8-10 weeks for the transition from g2p/GEp has made it impossible to run hypernuclear before the start of the 12 GeV installation



# Hall A Schedule (Tentative!)



Open issue:

Because of the continuing resolution the schedule is only firm through March 2011



# PAC37

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Nine new (three from Hall A,  $G_E^n$  with a neutron polarimeter, SIDIS with SoLID and hard photodisintegration of  $^3\text{He}$ ) proposals have been submitted to PAC37 (January 10-14) with four resubmissions from conditionally approved proposals (SIDIS with SBS, APEX, hypernuclear pion decay and d/u at large x).

PAC37 will also provide a grade and beam time allocation for proposals in one science category, approved in previous PACs (MOLLER, SoLID and possibly APEX):

→ Low-energy tests of the Standard Model and Fundamental Symmetries



# Hall A Approved Experiments at 12 GeV

Proposal	Physics	Energy (GeV)	Proposal days	Beam Time Allocation	Rating	Target Material
E12-06-114	DVCS	6.6, 8.8, 11	100			LH2
E12-06-122	A1n in valence region	2.2, 6.6, 8.8	23	23	A-	Polarized $^3\text{He}$
E12-07-108	GEp, GMp	6.6, 8.8, 11	31	24	A-	LH2
E12-07-109	GEp/GMp	4.4, 11	60	45	A-	LH2
E12-09-005	Møller	10.9, 11	210			LH2
E12-09-016	GEn	4.4, 6.6, 8.8	58	50	A-	Polarized $^3\text{He}$
E12-09-019	GMn	4.4, 6.6, 8.8, 11	49	25	B+	LH2, LD2
E12-10-006	SIDIS with SOLID	8.8, 11	90			Polarized $^3\text{He}$
E12-10-007	PVDIS with SOLID	8.8, 11	339			LH2, LD2
<b>TOTAL</b>			<b>960</b>			





# Hall A Conditionally Approved 12 GeV Experiments

Proposal	Physics	Energy (GeV)	Proposal days	Target Material
Conditional				
E12-06-118	F2n/F2p, d/u, EMC	2.2, 4.4, 6.6, 8.8, 11	31	$^3\text{H}$ , $^3\text{He}$
E12-09-018	SIDIS with SBS	8.8, 11	64	Polarized $^3\text{He}$
E12-10-012	hypernuclei	4.4	42	$^7\text{Li}$
E12-10-009	$A'$ search	1.1, 2.3, 3.3, 4.5	33	W



# 12 GeV

- Three large experimental projects in preparation for Hall A
- SuperBigbite:
  - Because of miscommunication between DOE and JLab, funding has hit a snag. A proposal is being prepared to split SBS in two projects, the first one below 2 M\$, with funding starting in FY12.
  - Second technical review at JLab very supportive, to be followed by mail review in January
- MOLLER:
  - Fully approved by PAC34
  - Director's review on January 14/15 at JLab highly successful
  - Waiting for CD-0, probably in FY14
- SoLID:
  - Technical conceptual design completed by ANL
  - Fully approved at PAC35 (as well as SIDIS with SoLID)
  - Waiting for Mont to organize Director's Review
- Both to be rated at PAC37
- Tentative projection for start up of 12 GeV Upgrade (budget-driven):
  - FY14      Hall A commissioning + 7 PAC days
  - FY15      16 PAC days
  - FY16      50 PAC days
  - FY17      91 PAC days



# Summary

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The research program in Hall A is highly successful, and has a bright future, both for the remainder of the 6 GeV program and for that with the upgrade. There are approved proposals that will take close to 10 years to complete (if one includes installation time):

- ~1 year with the HRS pair
- ~1.5 years with SuperBigbite
- ~2.5 years with MOLLER
- ~3.5 years with SoLID, including SIDIS

Clearly, it will take a very strong collaboration effort to accomplish this.

However, always keep in mind that the publication of our results is a necessary requirement for crowning our cap.

