CLAS Collaboration Meeting

July 10-13, 2018

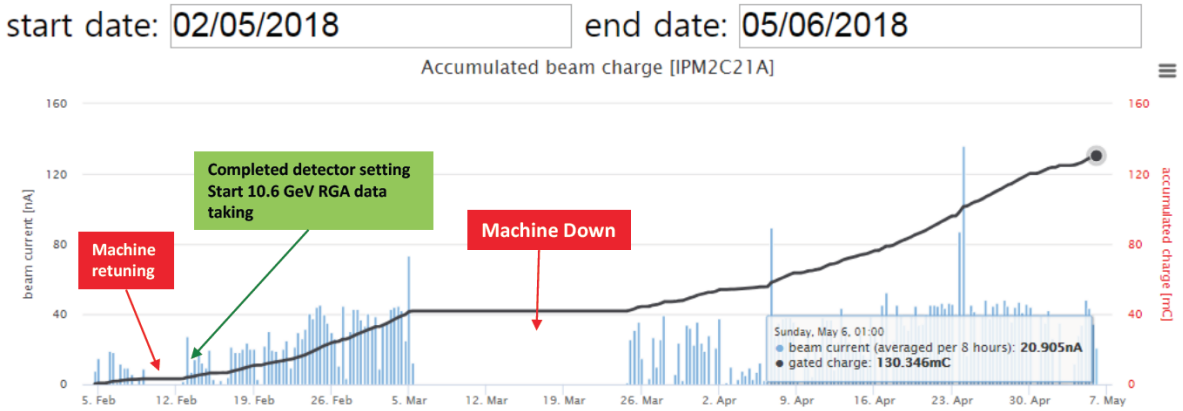
Outline

- Events since last meeting
- Collaboration business
- New CLAS publications
- Meeting agenda

Since the last meeting…

First part of RG-A completed!

- Data taking from Feb. 5 to May 6
- Accelerator down in March due to transformer failure
- Run extension thanks to budget increase
- Data for 13 experiments



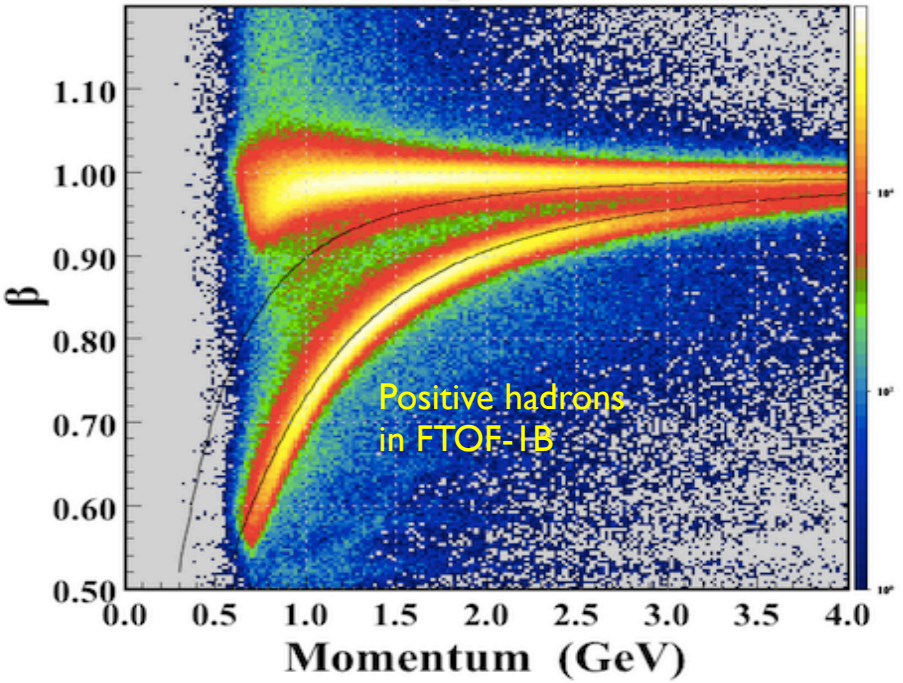
Proposal	Physics	Contact	Rating	Days	% complete	comment
E12-06-108	Hard exclusive electro-production of π^0, η	Stoler	B	80	24	
E12-06-108A	Exclusive N*->KY Studies with CLAS12	Carman	NR	(60)	35	
E12-06-108B	Transition Form Factor of the η' Meson with CLAS12	Kunkel	NR	(80)	24	
E12-06-112	Proton's quark dynamics in SIDIS pion production	Avakian	A	60	11	1 LTCC, 1 RICH
E12-06-112A	SIDIS Λ productiuon in target fragmentation region	Mirazita	NR	(60)	11	1 LTCC, 1 RICH
E12-06-112B	Colinear nucleon structure at twist-3	Pisano	NR	(60)	11	1 LTCC, 1 RICH
E12-06-119(a)	Deeply Virtual Compton Scattering	Sabatie	A	80	24	
E12-09-003	Excitation of nucleon resonances at high Q^2	Gothe	B+	40	48	
E12-11-005	Hadron spectroscopy with forward tagger	Battaglieri	A-	119	19	
E12-11-005A	Photoproduction of the very strangest baryon	Guo	NR	(120)	19	
E12-12-001	Timelike Compton Scatt. & J/ψ production in e+e	Nadel-Turonski	A-	120	19	
E12-12-001A	J/ψ Photoproduction & study of LHCb pentaquarks	Stepanyan	NR	(120)	19	
E12-12-007	Exclusive φ meson electroproduction with CLAS12	Stoler, Weiss	B+	60	31	
				Average completion (%)	22.3	

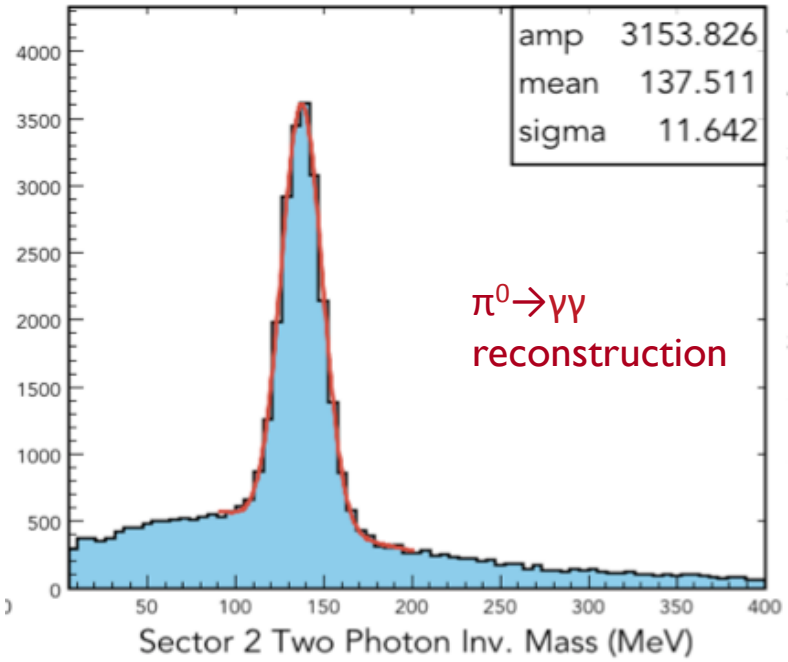
- Collected charge of high luminosity running 118 mC
- Total ABU: 21.7 PAC days

Thank you all for the big effort
Special thanks to Collaborators who volunteer for shifts!!

Looking at CLAS12 data

- Focus now on optimizing calibration and reconstruction to get the best out of the data
- Dedicated effort of software group, CalCom group and RG-A to improve algorithms and understand the details of the CLAS12 performance





- Continuous progresses on both calibration and reconstruction
- Still work to do to reach design performances
- Results from first analyses available!

See Volker's talk for CLAS12 performances and on-going analyses in Joined GW session

Software review and organization

- Software and computing review on May 14-15
- Review committee: A. Boehnlein, G. Heyes, D. Lawrence, R. McKeown, S. Wood
- Focus on evaluating the CLAS12 software architecture, the software organization and management, the computing resources needed to support data taking, data processing and analysis, manpower status, and ultimately the needs to get to a first physics publication
- Areas of concern identified in CLAS12 software organization and current computing requirements with potential impact on our ability to analyze CLAS12 data and obtain relevant physics results in timely manner
- New software organization developed by the Physics Division to improve overall coordination, work prioritization and communication between the Collaboration and the Run Groups, IT, and the software leaders
- Request to the Collaboration for increased involvement in software

Dedicated presentation on the review outcomes by R.McKeown and discussion in this afternoon software session

CLAS12 analyses

- Analysis of CLAS12 RG-A started for all physics sub-groups (deep exclusive processes, DIS and SIDIS, quasi-real photoproduction, nucleon structure, MesonX) and many reaction channels
- Common effort in developing analysis procedures and coordination among Physics Working Groups
- List of ongoing analyses being collected by Physics Working Groups to have up-to-date picture of collaborators interests, thesis projects, …
- First Experiment Analysis Review Committee (R. Gothe, K. Griffioen, E. Pasyuk) already nominated to review procedures as these are developed
- First "public" release of preliminary results at DNP 2018 next October
- Results to be presented need approval from Physics WG:
  - Progresses discussed at weekly First Experiment meetings
  - Periodic Physics WG meeting to review status and share information
  - Dry runs on October 11-12

Preparations for the Fall run

- 3 run groups involved in data taking between August and March:
  - RG-A: August 22 to November 15 at 10.6 GeV
  - RG-K: November 19 to December 19 at 6.5 and 7.5 GeV
  - RG-B: January 30 to March 10 at 10.6 GeV (to be continued in Fall 2019)
- Maintenance and detector improvements presently ongoing (CTOF, FT, HTCC, LTCC, MM, SVT, …) as well as new installations (BAND)
- Discussion of RG-A status, ongoing work, remaining issues and preparation for the new run in tomorrow First Experiment sessions
- Presentations on RG-K and RG-B preparations on Friday reviewing planned configuration, trigger requirements, run organization analysis/ calibration organization, …

With the number of "active" Run Groups increasing, coordination will be needed to optimize the use of resources and ensure proper sharing of information is in place:

- Run Group representatives at weekly Software and CalCom meetings
- Periodic meetings to review progresses, discuss issues, …

Service work tasks

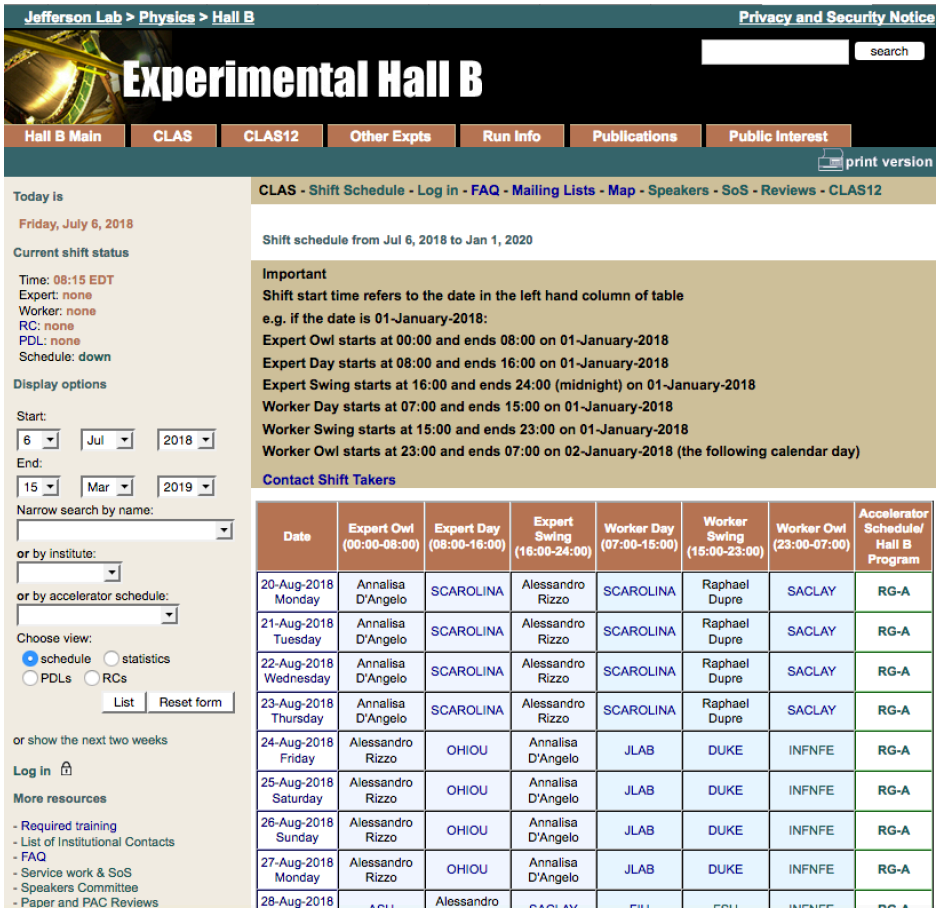
- List of high-priority service work tasks for the next 6-9 months developed based on input from CLAS12 software, calcom and detector groups
- Collaborators invited to select tasks from the list to complete their service work requirements
- Contact person defined for each task to provide all the necessary information and supervision
- Positive feedback so far, some tasks still available
- Updated list to be made available before next SOS deadline
- Should selecting tasks from the list for a fraction of the required SW become mandatory?

https://www.jlab.org/Hall-B/shifts/index.php?display=admin&task=clas12tasks

Subsystem	Task	Description	Category	FTE/year	Contact(s)	Due date	Recurrence	Responsible
SOFTWARE		Update the COATJAVA clas12fastmc: 1) complete implementation of central detector and forward tagger, 2) implement realistic detector resolutions, 3) implement dead detector elements/inefficiencies **Expertise required:** Java	Software	0.200	Gagik Gavalian (Nathan Baltzell)	September 30, 2019	Over the coming 4 months	none
DETECT		FTOF: Calibrator for fall RG-A run **Expertise required:** None	Software	0.400	Daniel Carman	March 31, 2019	Between Aug. 2018 and March 2019	none
DETECT		CTOF: Calibrator for fall RG-A run **Expertise required:** None	Software	0.400	Daniel Carman	March 31, 2019	Between Aug. 2018 and March 2019	none
DETECT		CND Calibration for RG-A **Expertise required:** None	Software	0.200	Silvia Niccolai	February 28, 2019	Over the coming 9 months	YEREVAN (Natasha Dashyan) since May 23, 2018
DETECT		FTOF/CTOF hardware on-call **Expertise required:** None, commitment requested is 1 month for 4 people	Hardware	0.100	Daniel Carman	Dec 31, 2018	Between Aug. and Dec. 2018	none
SOFTWARE		Development of unit/advanced test for all reconstruction services **Expertise required:** Java	Software	0.300	Nathan Harrison	Nov 30, 2018	Over the coming 6 months	none
SOFTWARE		Validation of new releases by running the simulation/reconstruction chain for specific final states, monitoring efficiency and resolution **Expertise required:** Coding	Software	0.300	Nathan Harrison	Nov 30, 2018	Over the coming 6 months	SCAROLINA (Nicholas Tyler) since May 22, 2018
SOFTWARE		Code debugging, coverage and spotbugs analysis **Expertise required:** Java	Software	0.300	Nathan Harrison	Nov 30, 2018	Over the coming 6 months	none
RECON		Validate pattern recognition using road maps **Expertise required:** Java	Software	0.200	Veronique Ziegler	Nov 30, 2018	Over the coming 6 months	none
CALIB		Systematic studies of Engineering run data **Expertise required:** Data analysis	Software	0.150	Daniel Carman	Nov 30, 2018	Over the coming 6 months	none
DETECT		FMT data analysis and calibration **Expertise required:** Data analysis	Software	0.250	Maxime Defurne	Nov 30, 2018	Over the coming 6 months	none
RECON		Develop energy loss package **Expertise required:** Java	Software	0.200	Veronique Ziegler	Nov 30, 2018	Over the coming 6 months	none
RECON		Develop multi-vertex package **Expertise required:** Java	Software	0.200	Veronique Ziegler	Nov 30, 2018	Over the coming 6 months	none
DETECT		RICH: analysis of the detector response to electrons for calibration purposes **Expertise required:** Java/Root or Groot	Software	0.200	Marco Contalbrigo	Nov 30, 2018	Over the coming 6 months	none

Fall-Winter-Spring shift schedule

- Shift schedule for the upcoming runs generated
- Foreign institutions swap period completed, domestic institutions swap period in progress
- Shift allocations based on (almost) full reward to Spring run volunteers
- Larger impact on small institutions: hopefully rare event due to extraordinary run extension
- Some institutions expected to have serious difficulties in covering the regular shift allocation because of travel impediments: to be discussed within the CCC, shift manager and PDL for a permanent solution
- Proper preparation for shifts (training, etc.) necessary: contact the PDL (E. Pasyuk) for questions



See Bryan McKinnon's talk on Friday

New Membership Applications

Application for CLAS membership by new Institutions:

- Lamar University presented by Phil Cole
- University of York presented by Daniel Watts
- Duquesne University presented by Fatiha Benmokhtar

Procedure:

- Presentation of the group, research interests, current and future plans, software and hardware contributions, … to the Collaboration for open discussion
- Application to be discussed (and approved) by the CLAS Coordinating Committee
- Membership for scientists who are currently collaboration members will be transferred to the new Institutions
- Other scientists from the new Institutions can apply for Term membership

Student and Post-doc group

- Initiative started few years ago as an open forum for CLAS students and post-docs
  - https://clasweb.jlab.org/wiki/index.php/CLAS_Term_Wiki
  - http://groups.google.com/group/clas-students
- Goals:
  - Provide information to newcomers about the CLAS structure and rules
  - Create an environment to facilitate the exchange of information among the young collaborators
  - Identify issues affecting the work of students and post-docs
- Initiative presently being renewed:
  - Will Phelps has agreed to be the group representative which would involve re-organizing the wiki, maintaining a mailing list for the postdocs, organizing the meetings, etc.
  - First official meeting at Fall CLAS Collaboration meeting

New CLAS papers and proposals

- 6 new publications since last Collaboration Meeting
- 7 submitted to the journal
- 7 in the pipeline:
  - 2 in the final author check phase
  - 1 in Collaboration-wide review
  - 2 in Ad-Hoc review
  - 2 Ad-Hoc review committees being formed

- New PAC proposals: see Volker's talk

Papers published since October

Paper ID	Paper Title	Lead Author	Contact Person	Target Journal
2017-06	Semi-Inclusive π^0 target and beam-target asymmetries from 6 GeV electron scattering with CLAS	S. Jawalkar	K. Griffioen	PLB
2017-10	Measurement of the beam asymmetry Sigma and the target asymmetry T in the photoproduction of omega mesons off the proton using CLAS at Jefferson Laboratory	P. Roy	V. Crede	PRC
2017-12	Hard exclusive pion electroproduction at backward angles with CLAS	K. Park	K. Park	PRL
2017-15	Probing High Momentum Protons and Neutrons in Asymmetric Nuclei	M. Duer	O. Hen	Nature
2018-01	Differential Cross Section for gamma d -> omega d using CLAS at Jefferson Lab	T. Chetry	K. Hicks	PLB
2018-04	First Measurement of Xi– Polarization in Photoproduction	J. Bono	L. Guo	PLB

Submitted papers

Paper ID	Paper Title	Lead Author	Contact Person	Target Journal
2017-09	Measurement of Unpolarized Cross Sections and Polarized Cross Section Differences for Deeply Virtual Compton Scattering (DVCS) on the proton at Jefferson Laboratory with CLAS, at 0.1 < x_B < 0.58, 1.0 < Q^2 < 4.8 GeV^2 , and 0.09 < −t < 2.0 GeV^2	N. Hirlinger Saylor	P. Stoler	PRC
2017-14	Photoproduction of pi0 on Hydrogen using e+e-(gamma) detection mode with CLAS	M. Kunkel	M. Amaryan	PRL
2018-02	Measurements of $gamma_{v} p ightarrow p' pi^{+} pi^{-}$ cross section with the CLAS detector for $0.4 GeV^{2} < Q^{2} < 1.0 GeV^2$ and $1.3 GeV < W <1.825 GeV$	G. Fedotov	G. Fedotov	PRC
2018-03	EMC Effect and Correlated Nucleons: When One Plus One is not Two	B. Schmookler	O. Hen	Nature Physics
2018-07	First results on nucleon resonance photocouplings from the gamma p -> p pi+pi- reaction	E. Golovach	E. Golovach	PLB
2018-08	Beam-Target Helicity Asymmetry E in K0Lambda and K0Sigma0 Photoproduction on the Neutron	D. Ho	R. Schumacher	PRC
2018-09	The center of mass motion of short-range correlated nucleon pairs studied via the A(e, e'pp) reaction	E. Cohen	O. Hen	PRL

Author Check or Collaboration Review

Paper ID	Paper Title	Lead Author	Contact Person	Target Journal
2018-05	Beam Spin Asymmetry of ep → epη in the Deep Inelastic Regime	B. Zhao	A. Kim	PLB
2018-06	Photoproduction of K+ K- meson pairs on the proton	S. Lombardo	M. Battaglieri	PRD
2018-10	Study of Cascade* Photoproduction from Threshold to W = 3:3 GeV	J. Goetz	K. Hicks	PRL

With Ad-Hoc Committee

Paper Title	Lead Author	Contact Person	Run Group
Study of Color Transparency in ρ^0 Electroproduction off Nuclei	L. El Fassi	L. El Fassi	eg2
Toward a Complete Experiment in omega Photoproduction on the Proton: Measurement of the Double-Polarization Observables F,...	P. Roy	V. Crede	g9

Committee being formed for:

- Direct Observation of Proton-Neutron Short-Range Correlation Dominance in Heavy Nuclei" by M. Duer, O. Hen et al. (eg2)
- First exclusive Deeply Virtual Compton Scattering measurement off bound nucleon in ^{4}He by M Hattawy (eg6)

Meeting Agenda

- Morning talks dedicated to Hall B, Lab and Accelerator status
- Talks on new opportunities with positron beams and final results from Primex
- Software session in the afternoon
- First experiment session tomorrow
- Physics WG parallel session and Joined session on CLAS12 analysis
- Business meeting on Friday morning
- Membership Committee meeting over lunch break tomorrow
- Reception tonight!