

CLAS12 software session

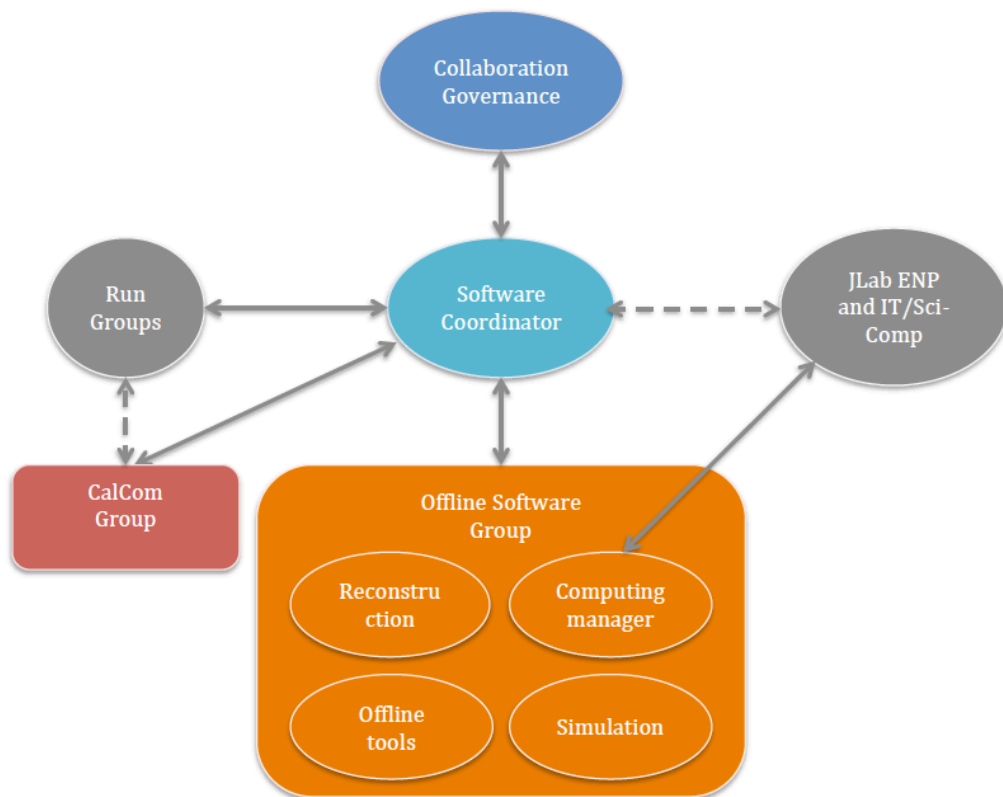
November 12, 2019



Outline

- Software organization
- Reconstruction progress since last meeting
- Advancements in development of computing tools
- Running simulations offsite
- Near term plan
- Session agenda and software workshop

Software organization



Organization structure consolidated and strongly supported by Hall B

Hall B organization

Offline
+
**framework, tools,
reconstruction and high-
level analyst**
+
**CLAS Coll SW
Coordinator**

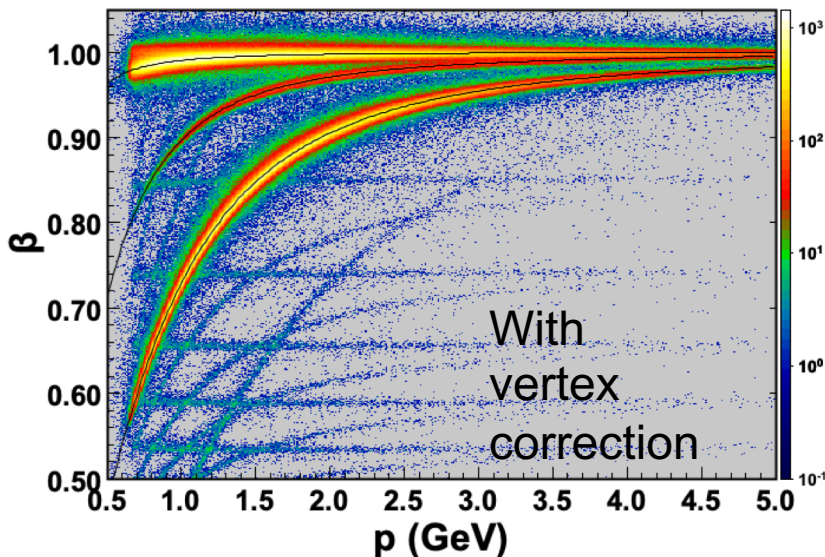
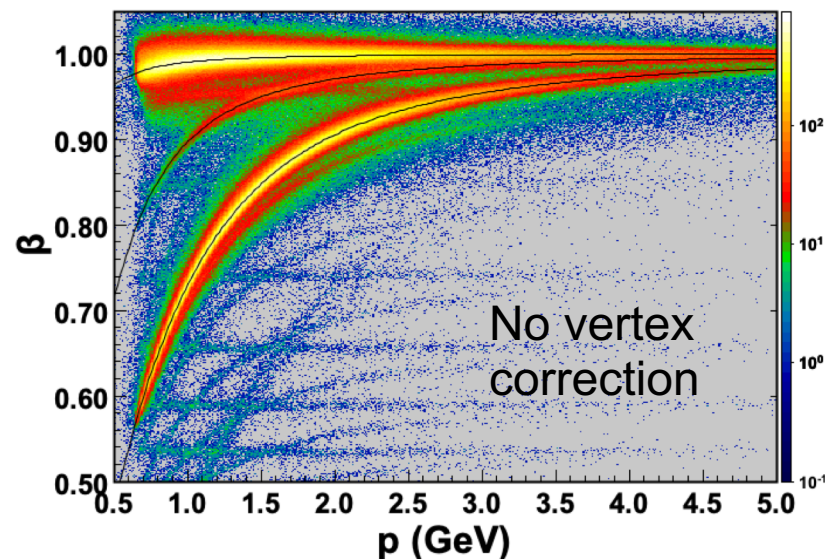
- G.Gavalian - SW Architect
- M.Ungaro - Simulations
- V.Ziegler - algorithmes/validation
- N.Baltzell - Computing infrastructure
- N.Markov - Data processing
- New hired - Rec support
- + W.Phelps (CNU) - Data process support
- + D.Heddle (CNU) - CED

Reconstruction progress

...since the last meeting:

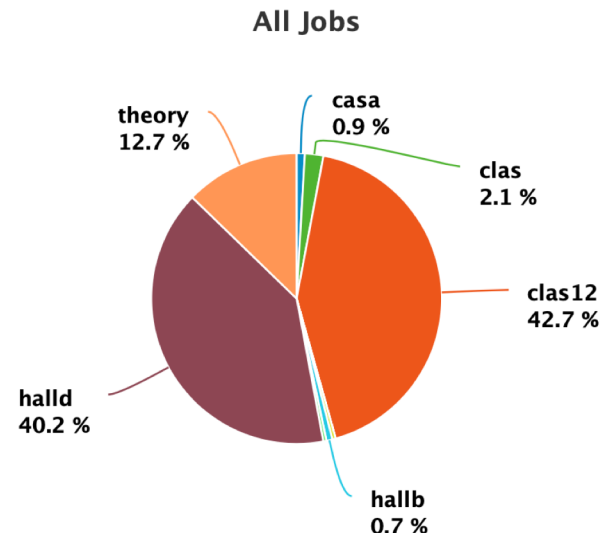
- Preparation for DNP cooking and new production release (6.3.1)
- Continued progress on reconstruction algorithms
- Preparation for upcoming run (RTPC reconstruction)
- New production release in the works

See Veronique's, Nathan's and David's talks



Data processing and Computing tools

- Recent DNP cooking showed:
 - CLAS12 can use the allocated fairshare
 - Data processing rate is consistent with estimates of 400-500 million events/day
 - Efficiency still limited by significant job failure rate; continuous effort from chefs and computing manager to maintain throughput
- Now:
 - reconstruction integrated in SWIF Workflow
 - Fully automatic process
 - Test showed 100% success with minimal retries
 - Being used by chefs
 - Improvements to Clara thanks to Vardan and Nathan
 - Improvements to batch farm usage



Farm usage in September
from SciComp web page
<https://scicomp.jlab.org/scicomp/#/usageStat>

See Nathan's talk

Running simulation offsite

Interface for simulation submission to offsite farm released:

- Major effort over the last months with support from Collaborators (MIT&Uconn), Scicomp, OSG, Glasgow
- Now able to submit to OSG and Glasgow (UK-GridPP)
- Expandable to other resources

Home About OSG Stats			
CLAS12 Monte-Carlo Job Submission Portal			
Logged in as ungaro			
Last Update: 2019-11-07 10:50:06			
Farm Name	Total Available Cores	Busy Cores	Idle Cores
OSG	9188	8139	1049

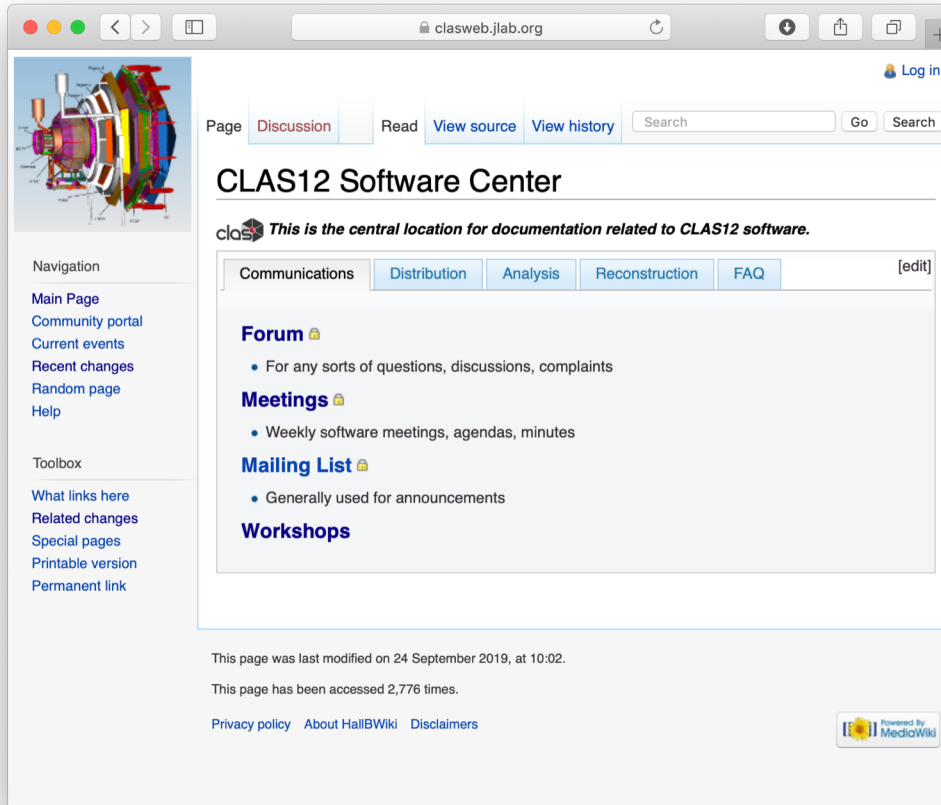
username	job_id	submitted	total	done	running	idle	hold	osg_id
fxgirod	62	11/4 20:39	1000	996	0	0	4	1417949
avakian	80	11/6 12:50	1000	994	5	0	1	1422770
fxgirod	81	11/6 14:22	3000	2989	10	0	1	1423098
baltzell	82	11/6 19:34	1000	916	84	0	0	1425035
avakian	83	11/6 23:13	424	350	74	0	0	1425192
avakian	84	11/7 07:38	660	4	656	0	0	1427085
avakian	85	11/7 08:20	240	1	239	0	0	1427587

1074 jobs, 0 completed, 0 removed, 0 idle, 1068 running, 6 held, 0 suspended. updated on 2019-11-07 10:50:07

Type 1	Type 2	Type 3 (coming soon)	Type 4 (coming soon)
<ul style="list-style-type: none">- Container CLAS12 gcard- Container or gmc internal generator- Arbitrary number of jobs- Arbitrary number of events for each job (max 10,000)	<ul style="list-style-type: none">- Container CLAS12 gcard- Use LUND files from a web location or directory in /volatile- One job per LUND file	<ul style="list-style-type: none">- Use gcards from web location.- One set of jobs per gcard.- Container generator- Arbitrary number of jobs- Arbitrary number of events for each job	<ul style="list-style-type: none">- Use gcards from web location.- One set of jobs per gcard.- Use LUND files from a web location- One job per LUND file

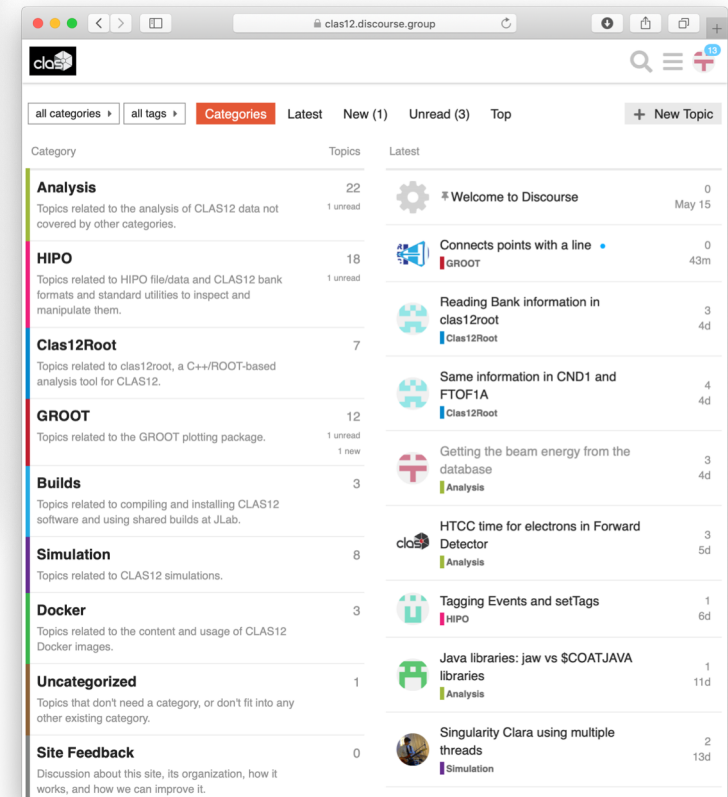
See Maurizio's talk

Documentation



Centralized software wiki

https://clasweb.jlab.org/wiki/index.php/CLAS12_Software_Center



New forum for software related questions and communications restored

Near term plan

- Simulation:
 - BG merging validation
 - Update TOF resolutions
 - Hipo4 output
 - FMT update for BONUS12 configuration
- Reconstruction:
 - Deploy optimized FD tracking with speed improvement and improved algorithm
 - Update swimming and trajectories
 - Update EB to use trajectories
 - CND: complete development and implementation of CND-CTOF matching for vetoing charged particles
 - CVT: validate new package, assess performances and deploy it
 - Support to BONUS12
- Common Tools/framework:
 - Engines exit codes/limit CCDB access attempts
 - Decoder fixes
 - (start) Geometry restructuring
 - FASTMC
- Computing and Data Processing tools:
 - Continue development of SWIF-based workflows in support of data processing

Software session and workshop

Software Session

14:00 - 18:00

Software Working Group Meeting - Plenary

<https://bluejeans.com/544609118>

Convener: Raffaella De Vita (INFN - Genova)

14:00 **Introduction and News 15'**

Speaker: Raffaella De Vita (INFN - Genova)

14:15 **Event reconstruction updates 25'**

Speaker: Dr. Veronique Ziegler (Jefferson Lab)

14:40 **EB updates, helicity and scaler analysis 20'**

Speaker: Nathan Baltzell (Jefferson Lab)

15:00 **RTPC reconstruction 20'**

Speaker: David Payette

15:20 **CLAS12 DC Tracking with Machine Learning 25'**

Speaker: Dr. Veronique Ziegler (Jefferson Lab)

15:45 **Coffee break 30'**

16:15 **SciComp News 30'**

Speaker: Bryan Hess (Jefferson Lab)

16:45 **Environment, computing resources, data processing at JLab 20'**

Speaker: Nathan Baltzell (Jefferson Lab)

17:05 **Simulation updates and use of offsite resources 30'**

Speaker: Dr. Maurizio Ungaro (Jefferson Lab)

17:35 **The GlueX experience in offsite computing 25'**

Speaker: Prof. Richard Jones (University of Connecticut)

Software Session

14:00 - 17:00

CLAS12 Software Workshop

<https://bluejeans.com/544609118>

Topics:

1. Computing at JLab
2. Analysis trains: how to configure a standard or custom wagon
3. CLAS12root
4. Simulations

Conveners: Nathan Baltzell (Jefferson Lab), William Phelps (Christopher Newport University), Dr. Derek Glazier (University of Glasgow), Dr. Maurizio Ungaro (Jefferson Lab)

Location: F113