

Software Session

March 12, 2024



Agenda

Tuesday, March 12

14:00 → 15:45 Software & Computing

Convener: Raffaella De Vita (INFN - Genova)

14:00 Introduction

Speaker: Raffaella De Vita (INFN - Genova)

14:20 Analysis tools

Speaker: Christopher Dilks (Jefferson Lab)

14:50 Run dependent simulations

Speaker: Maurizio Ungaro (Jefferson Lab)

15:15 CED and swimming

Speaker: Dave Heddle (CNU)

15:45 → 16:15

Coffee Break

16:15 → 18:15 Offline Software

Convener: Raffaella De Vita (INFN - Genova)

16:15 Level3 trigger development status

Speaker: Richard Tyson (Jefferson Lab)

16:45 New helicity information and integrity checks

Speaker: Nathan Baltzell (Jefferson Lab)

17:00 Beyond pass2: physics validation of updated FD tracking

Speaker: Tongtong Cao (Jefferson Lab)

17:30 Tuning of DC digitization in GEMC

Speaker: Mariana Tenorio Pita (Old Dominion University)

17:45 Raster calibration via multi-track vertex reconstruction

Speaker: Derek Holmberg (William and Mary)

Thursday, March 14

09:00 → 10:30 Plenary

Convener: William Phelps (Christopher Newport University/Jefferson Lab)

09:00 Update from Jefferson Lab

Speaker: David Dean (TJNAF)

09:30 AI Session Introduction

Speaker: William Phelps (Christopher Newport University/Jefferson Lab)

09:45 An Introduction to the Jefferson Lab Data Science Department and its Capabilities

Speaker: Daniel Lersch (Jefferson Lab)

10:15 CLAS AI Group Discussion

Speaker: William Phelps (Christopher Newport University/Jefferson Lab)

10:30 → 11:00

Coffee Break

11:00 → 12:30 Plenary

Convener: William Phelps (Christopher Newport University/Jefferson Lab)

11:00 Modeling Dilepton Background using Boosted Decision Trees

Speaker: Pierre Chatagnon (Jefferson Lab)

11:20 Lepton Identification using TMVA Methods

Speaker: Mariana Tenorio Pita (Old Dominion University)

11:40 Photon Classification with AI at CLAS12

Speaker: Gregory Matousek (Duke University)

Support to data analysis

- With more data sets being fully processed and available for physics, the focus is naturally drifting toward supporting data analysis:
 - **New IGuAnA package** to preserve, organize, and make available analysis algorithms such as momentum corrections, fiducial cuts, ...
See Chris' talk
 - Collaborative effort to develop and test **new fiducial cuts** based on trajectory information (REC::Traj.edge)
 - Move to run **simulations using real run numbers** to reproduce changes in detector configuration and performance (resolution and efficiency) that may affect a data set
See Mauri's talk
 - Improved handling of **helicity** information and delayed reporting correction
See Nathan's talk
 - Improve **agreement of MC and data** in terms of resolution and efficiency:
 - Optimization of detector digitization routines in GEMC
See Mariana's talk
 - Repeat bg-merging studies and investigate the source of discrepancy between MC and data losses

New developments

- Online software, toward high luminosity:
 - Development of **level3 trigger** to improve overall trigger purity and provide more flexibility for multi-particle final states:
See Richard's talk
- Offline software, beyond pass2:
 - New charged-particle “**swimmer**” package to reduce processing time with no loss of accuracy
See David's talk
 - Updated FD tracking using a **Deterministic Annealing Filter** (DAF) for improved efficiency and resolution
See Tongtong's talk

Computing

▪ News:

- Upcoming changes to the **default environment**
- Centos7 end-of-life and switch to **Alma 9**

See Nathan's talk

▪ Disk usage discussion:

- Recent /work/clas “crisis” shows we have to be more proactive with disk usage and possibly implement **new policies**:
 - /work/clas and /work/clas12 are permanent areas, i.e. they will get full if no one deletes data
 - /work/clas is in large fraction occupied by data that have not been accessed in years or that belongs to users who have left the collaboration
 - Invitations to cleanup have been only partially effective
 - **New proposal(s)**:
 - Backup all data to tape
 - Delete from disk all data that have not been accessed in X years
 - or
 - Delete all data unless explicitly claimed
 - or
 - Delete all data and let active users retrieve from tape what is needed

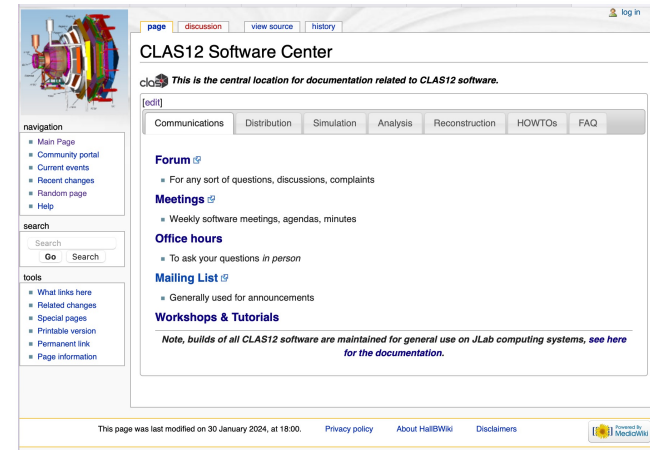
** /work and /volatile usage information is available on the CLAS12 software center wiki, under FAQs*

User support

- Software center wiki
- Mailing list:
clas12_software@jlab.org
- Software forum
- Office hours every week on Tuesday at 9:30 am
- Recording of previous tutorials available on the wiki

Centralized software wiki:

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



Discourse forum for software related questions and communications

