

Minutes from the RG1a SIDIS-pi0 analysis of June 28, 2024
Notes by Casey Morean

Please remember to post your slides on the ELOG at <https://hallcweb.jlab.org/elogs/SIDIS+Pi0/>

Meeting Recording:

N/a

Passcode: N/a

Present: Paul Anderson, Josh Crafts, Ed Kinney, Casey Morean, Mike Nycz, Avnish Singh

Casey Morean:

Wednesday

- Josh, Avnish and I set up vscode environment to connect to ifarm. We began a nps_analysis git repo and added CERN ROOT include path so vscode intellisense could detect CERN ROOT headers.
- Created a bash script to load RVarDef variables from hcana and NPSlib.
- Josh, Avnish, and I discussed the pion reconstruction code. We isolated that reconstructing the event that fired the VTP based trigger is a good starting point towards building pions from clusters in NPS.

Friday

- Mike, Paul, and I along with LAD students recorded videos on setting up the replay and connecting remotely to JLab.
 - We all discussed the proper documentation, wiki entries for basic things. Add reports and analysis to the ELOG, make general information available on the wiki. Version each report and iterate as needed when new analysis is available. Make links to reports on ELOG and record meeting minutes on the wiki. Also set up a mailing list.
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Joshua Crafts:

- Compiling information from multiple sources to form the runlist. This will take the DVCS google sheet, Peter Bosted's makerunlist.f, Mike Nycz tabulated epics values, and combine them into a single point of truth.
 - Ed suggested not to focus on the idealized runlist, this will be iterated upon over time. (Casey M suggested versioning the report and document)
 - The list will be a single monolithic list with space separations.
 - The source of information for this list should be outlined.
I.e. Trigger thresholds. Most of these can be obtained from within root files or raw EVIO files themselves. Some values were only available from the start-of-run script, posted to the logbook. The run ranges for these two sources should be listed somewhere in the report.

- At this time Josh will use a green, yellow, red labeling scheme to mark runs that are good, indeterminate, bad. Ed suggested the indeterminate so we for the time being so we don't get bogged down in specific details and can revisit the issues later.
 - Josh suggested the hand-written sheets were the ideal source of truth. Ed noted that several times throughout the run period, people would pre-write information that turned out wrong.
 - This led to the discussion of listing the SOURCE of truth for each aspect of the runlist. Ultimately the run sheets may not be the ideal source of information.
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Mike Nycz:

- Described his EPICS extraction table. Made the table available to Josh. This includes the threshold information for all runs. Mike went through and got the values for all runs - even if they were not available in the rootfile or EVIO file.
 - The files also include information on target density.
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Ed Kinney:

- How do the SIDIS-pi0 meetings and RG1a analysis meetings interface? How do we organize ourselves for the meetings and communicate tasks / results / statuses / work allocation?
 - We touched on the short-term HMS calibrations during pass0. We expect the full group will perform HMS calibrations together. One potential way to do this is by giving each student a subset of runs - maybe based on a kinematic setting. Casey mentioned some kinematics are more challenging than others.
 - Each person should be able to run replays and utilize the same software analyzer. This pertains to the calibration scripts to run, which Casey Morean will present at a NPS RG1a analysis meeting. Each person should be aware how each disk should be used and be able to use git to contribute to the main JeffersonLab repo.
- The focus on the runlist was reaffirmed to be a good/bad/indeterminate classification so that we can approach the runlist incrementally. This will incorporate advanced checks on items listed by Carlos further into the future. These were outlined by Carlos in the meeting, linked in a Hall A DVCS thesis (presented by Carlos RG1a analysis, not recorded in meeting minutes). We foresee this task of determining good runs will fall on system experts and not an individual.
- What is the plan for waveform fitting? At this time, we believe there will be a devoted group on waveform analysis. We desire regular updates from this group so we can understand the methods employed. We don't want this critical work to occur in isolation. Ed mentioned the need to replicate analysis by two independent parties in Hermes experiments.
 - Another reason to keep us apprised is Mike and I have made additional allocations of compute resources through OSG. There are also advanced full waveform fitting programs Mike and Jixie used for SoLID beam tests.

Josh is our calibrated source of information - Just like Geiger and Marsden. During the Rutherford experiment Geiger and Marsden were the calibrated source, and so could not travel on the same train. Josh is restricted from traveling on I-95 and must report when traveling more than 10 miles from the lab! 😊

Action items

- Avnish, Josh | Make a report of the RVarDef variables accessible to all users, document usage of RVarDef bash script.
- Avnish, Josh | Reproduce the VTP trigger using the ADC information and gain coefficients used for a given run.
- Wassim? | Mapping of all the trigger level gain coefficients used in the trigger during the NPS run delineated by run number.
- Mike | Link the tutorial videos to the wiki and keep refer to the person to talk with to get passwords - or used common password
- Add accompanying ROOT and / or PNG output for EPICS values on a run-by-run basis. These plots are to be viewed in a JSROOT server. The goal is to have these available for further evaluation if junk or problem runs are found.
- Mike | Create a report and version number for current epics script. Make the script available to Casey Morean for full pass through data.
- Casey | Complete the angle encoder script. Make the script two phases, where the first should save SHMS / HMS encoded data, and the second phase takes the encoded data and decodes it. (Second pass through phase two does not require a pass through all the data).
- Casey | Run the replay pass to extract EPICS plots and angle images.
- Josh | Update angle values in standard_coin.kinematics based on angle photos - See Casey task.
- Casey | Set up a SIDIS-PI0 mailing list
- Josh | Present at next RG1a analysis meeting - Present what we know about current runs from a combination of the DVCS runlist sheet and Peter Bosted's makerunlist.f script
- Casey | Present at the next RG1a (and record) proper use and loading of the analysis software.
- Mike | Send table of epics information to Josh.
- Josh, Someone | Scan in all the NPS hand-written run sheets.
- Casey | Ask Sanghwa to / how to save a copy of the current RCDB.
- Casey | Update RCDB based on the runlist given by Josh. Add a version tag to this

At:

Columbus, USA	Thu, Jun 27, 2024 at 12:00 noon EDT
Paris, France	Thu, Jun 27, 2024 at 6:00 pm CEST
Tunis, Tunisia	Thu, Jun 27, 2024 at 5:00 pm CET
Yerevan, Armenia	Thu, Jun 27, 2024 at 8:00 pm AMT

Beijing, China	Fri, Jun 28, 2024 at 12:00 midn CST
Daegu, South Korea	Fri, Jun 28, 2024 at 1:00 am KST
Taipei, Taiwan	Fri, Jun 28, 2024 at 12:00 midn CST
Honolulu, USA	Thu, Jun 27, 2024 at 6:00 am HST
Boulder, USA	Thu, Jun 27, 2024 at 10:00 am MDT