

Agenda

Mon 28 June	Tue 29 June	Wed 30 June	Thu 01 July
<ul style="list-style-type: none"> • Check CRMDs • Set thresholds • Plateau • Tutorial on taking data, uploads, etc 	<ul style="list-style-type: none"> • QuarkNet housekeeping <ul style="list-style-type: none"> ◦ Registration ↗ ◦ Update profile in quarknet.org (how to) ◦ If you completed a 2019 or 2020 teacher survey, fill out the survey update ↗ ◦ If you have not, fill out the full survey ↗ ◦ Data Activities Portfolio • CRMD "e-Lab-less" experiments; which shall we do? <ul style="list-style-type: none"> ◦ altitude study ◦ muon absorption study ◦ zenith angle study ◦ counter separation, rate, and flux ◦ ToF from Vanderbilt csv files ↗ or Vanderbilt-derived Google Sheet ↗ ◦ other 	<ul style="list-style-type: none"> • Warm-up <ul style="list-style-type: none"> ◦ Shuffling the Particle Deck (online version ↗) ◦ Quark Workbench (online version) • Quantum Physics Data Activities <ul style="list-style-type: none"> ◦ What Heisenberg Knew <ul style="list-style-type: none"> ▪ Plot Δp vs. Δx ▪ Plot Δp vs. $1/\Delta x$ ◦ TOTEM Data Express ◦ TOTEM Entanglement (in dev) <ul style="list-style-type: none"> ▪ Red team data file and data form ↗ ▪ Green team data file and data form ↗ ◦ Tunneling (in dev) <ul style="list-style-type: none"> ▪ video ↗ ▪ image ↗ ▪ Spreadsheet ↗ (copy or download) • Prep for OPAL Masterclass <ul style="list-style-type: none"> ◦ LEP: a pioneering accelerator ↗ (video) ◦ Live Zoom presentation on LEP and OPAL (Mike Hildreth, University of Notre Dame) (1:30 pm MT) • CRMD work 	<ul style="list-style-type: none"> • Warm-up <ul style="list-style-type: none"> ◦ STEP-UP poster ↗ ◦ discussion • LEP Masterclass ↗ <ul style="list-style-type: none"> ◦ Motivations ◦ Intro slides ↗ ◦ Data form ↗ ◦ Data spreadsheet ↗ ◦ Discussion of results • Implementation plans (1:30 pm MT) <ul style="list-style-type: none"> ◦ Template ↗ • Old radio take-away tour (Steve Schnetzer) • Final reflections

28 June:

Teachers arrived and brought their CRMDs. In attendance this year are the following: Steven Millward, Geoffrey Williams, Robert Franckowiak, Enrique Arce-Larreta, Enoch Lambert, and newcomers Stacey Floyd, Allison Bulson, and Earla Durfee.

Benjamin Davis and Jaquelyn Mukherjee still have their CRMDs. They were unable to make it to the conference. Contact will be made to assure activity.

Devices were assembled to make sure they were working properly. New students were paired with previous attenders to assist with device preparation and answer individual questions.

Most of the day was used to assemble a complete CRMD. Those who brought there device from last year got there systems running and began to plateau. In the afternoon the newcomers were instructed in plateauing the devices. The long version and the short version were discussed. A discussion was had regarding the coincidence rate, the bias potential, and the number of coincident channels chosen. This relates to the question: Are we all seeing the same thing

The new teachers got e-lab accounts and installed EQUIP on PCs. They searched topics to explore since e-lab was partially functioning. Install of EQUIP to some machines would crash because of a Java update. A workaround was found to revert to Java 6.

29 June:

A tour of the QuarkNet site and a introduction to the cosmic e-lab were modeled to show the capabilities and benefits to the teacher and the student. A word of caution was given when creating student groups - make sure you use generic group names, since those will stay on the account in perpetuity. The project map, analysis tools, and blessing were discussed as well as the Library and Resources links.

Enrique used a few minutes to share his experiences with the group and spoke about the CERN opportunity. Another opportunity was to submit to BeamLine for Schools by having students design a plan and send a video to CERN to actually implement the experiment. His students were selected to participate for 2019.

Time of Flight experiments calculations were discussed as a method to employ the CRMDs when e-lab may be operating minimally. The design of a poster was explained to be used to summarize experiments that are done by students and to be produced by the teacher for the workshop (one explaining their individual experiment at the end of the day and another for a lesson plan implementation).

30 June:

Ken Cecire was on site to discuss particle zoo according to schedule listed on Quarknet.org, ISU agenda. Mike Hildreth, from University of Notre Dame, joined us by zoom to discuss LEP and OPAL.

1 Jul:

The geometry upload was discussed to make sure the time stamp in the geometry configuration is previous to the data file that is associated with that geometry. Ken Cecire introduced the LEP Masterclass. Participants interpreted data.

Dr. Shropshire informed us of a HAM radio operator who passed away and donated his electronic equipment to Idaho teachers. We took a tour of a room in the basement containing those materials to select and use in the classroom.

A final discussion of (1) Blessing files from the data uploaded and used as a comparison for future uploads took place and (2) pressure adjustments. Schools' IT departments sometimes prohibit program installation and/or changing power usage settings. Regarding power settings on the computers - check with your IT. There is not just one place to keep the hard drive from shutting down. You need to look for HD sleep and power off configurations. Some laptops, even plugged in will revert to battery power until the battery drains a given amount then begins to recharge. During those times, the computer is in battery mode and may sleep.

The CRMDs were packed up after teachers put the finishing touches on their posters. Teachers then presented their implementation plan of how the devices would be used in the class. The assignments for the specific devices were made and included below. Workshop surveys were sent and completed before the attendees left.

A follow-up on assigned detectors (2021-22):

6483 Geoffrey
6606 Enoch
6689 Steve
6780 Allison
6781 Jaquelyn
6662 Enrique
6619 Robert
6657 Earla
6863 Benjamin
6224 Stacey