

# How To Run The DAQ (merged DAQ)

## HiRA

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This document tries to explain how to run the DAQ for a HiRA experiment from scratch.

### 1 Run the DAQ

1. Go to spdaq29

Open a terminal and ssh to spdaq29

> `ssh -XY e15190@spdaq29` or type `goExp`

If the password is needed: `GoGreen1`

2. In the Home directory (`/user/e15190`) run

> `./ReadoutShell`

A window as displayed in Fig. 1 should appear.

- Write an appropriate Title for the run (Make sure that Record is checked)
- Click Start (This allows the computer to talk with the VMUSB). A message saying that the Readout has connected to the VM-USB should appear. Nothing can be done until this point.

3. Open a new terminal, ssh to spdaq29 and, go to `/user/e15190/HINP_ADC` and run

- `./CHIP`, the window as displayed in Fig. 2 will appear.
- If the VME crate has been restarted then go to `file/XLM.configure`, click Pick load file, click Browse and load the following file: `xlmxxv_2mb_rev545.bit` (the location of this file is `/user/e15190/HINP_ADC`) and click ok.
- Otherwise go directly to this step: go to `file/Load` and click Browse. Choose the following file: `e15190a.setup` (the location of this file is `/user/e15190/HINP_ADC`). Use the name of the file with the last letter in alphabetical order, if `e15190d.setup` exists for example, this is the file that should be loaded, click ok.
- **If it is the first time**, there is high probability that the settings are not loaded properly (1003 error). You should go to the vault and turn off and on the motherboard power situated in the top bin of the left rack. Once you put the power back on, go back to the Data U and reload the `.setup` file.

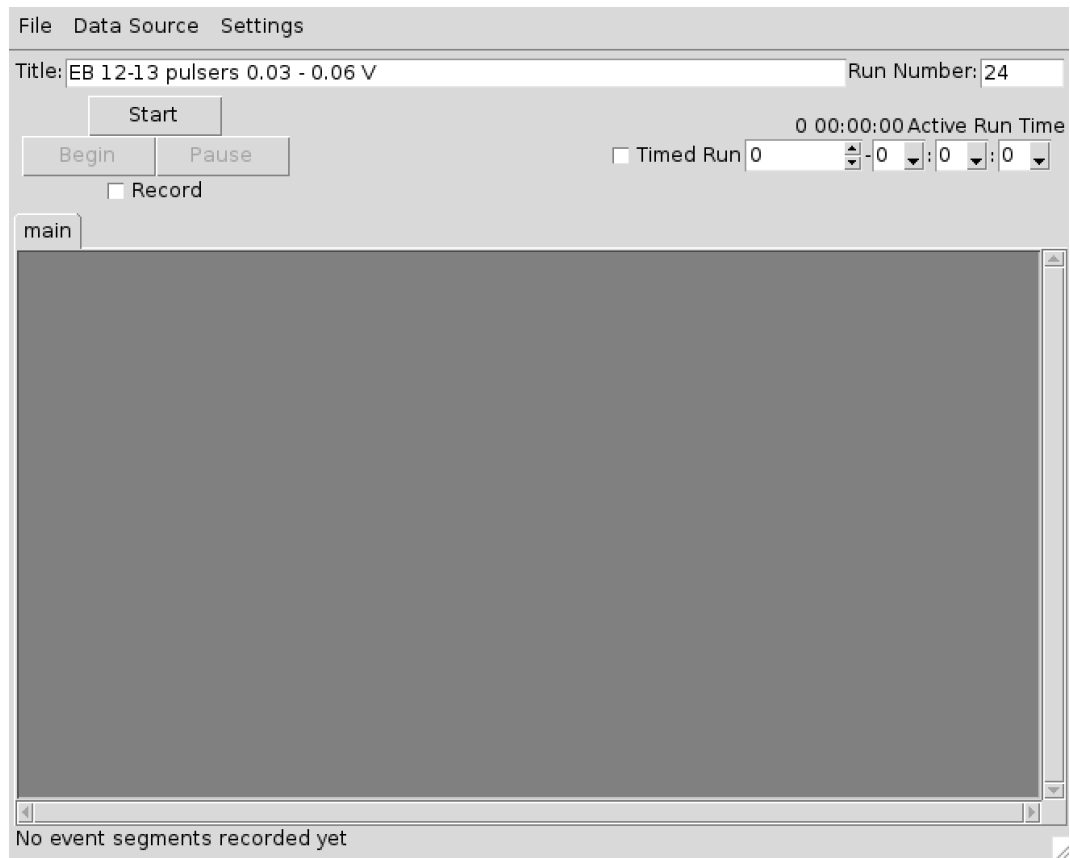


Figure 1: Window of the ReadoutShell script.

- Make sure that in the “Motherboard Control” panel all the chip boards are loaded for Motherboard 1 and 2, make sure it is written *new chip*. Only the last two chipboard should be *empty*, all the other should be *new chip* as well. If this is not the case, something has gone wrong and the system will not work properly.
4. Go back to the readout shell window
    - click *Begin*, the run should just start and it will be time to look at the Spectcl spectra.
    - To end the run just click *Stop*.

## 2 Running Spectcl

5. Go to `/user/e15190/SpecTclMerged` and run (!!!This should not be run on an spdaq!!!)

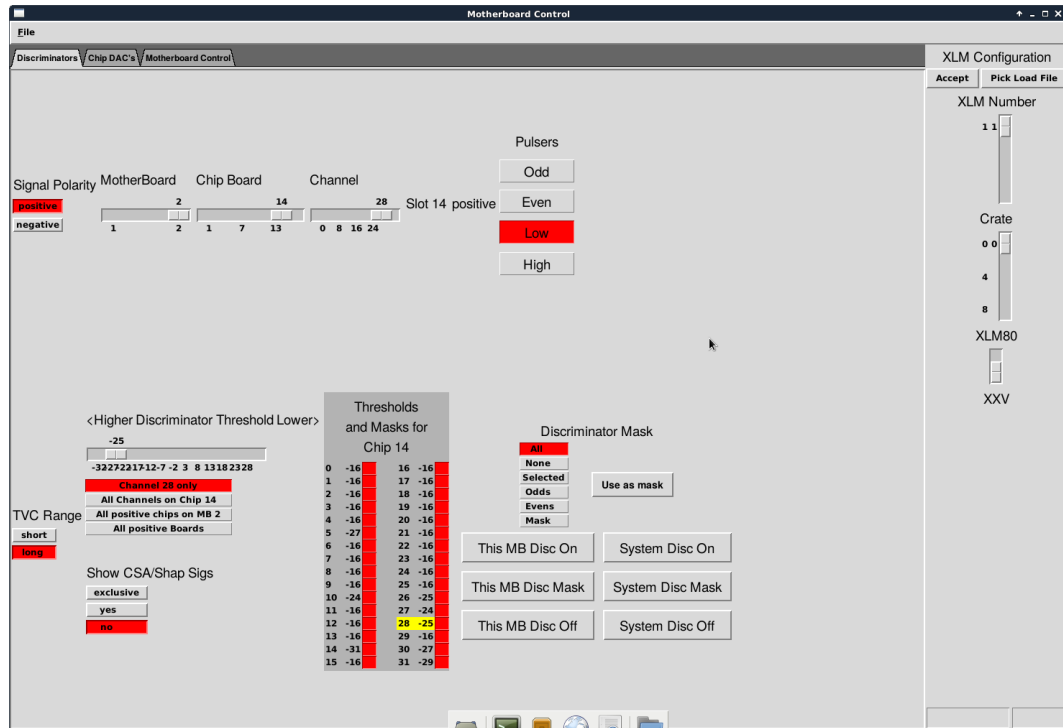


Figure 2: CHIP window.

- `./Spectc1`, the windows as displayed in Fig. 3 will appear
- Click Load and choose the appropriate definition file for the spectra you want to see (located in `/user/e15190/def-files`) (cf Fig. 3a)).
- On the menu of the window click Data Source/Online, choose evbout and in the Host type: `spdaq29` as displayed in Fig. 3b) and click ok.
- Then go the Window for spectrum displayed in Fig. 3d), click Window/Read Configuration, go to the win-files folder and pick a .win file that you want to inspect.
- If, for any reason you want to clear spectra, just click Clear Spectra, in the window displayed in Fig. 3c).
- Note about the 1003 error: If the 1003 error is printed in the terminal, that means that the motherboard are not loaded properly. You should re-cycle the power and go back to item 3 of this document.

### 3 Loading the CAMAC parameters for the Csl

This has to be done only if the CAMAC crate has been turned off.

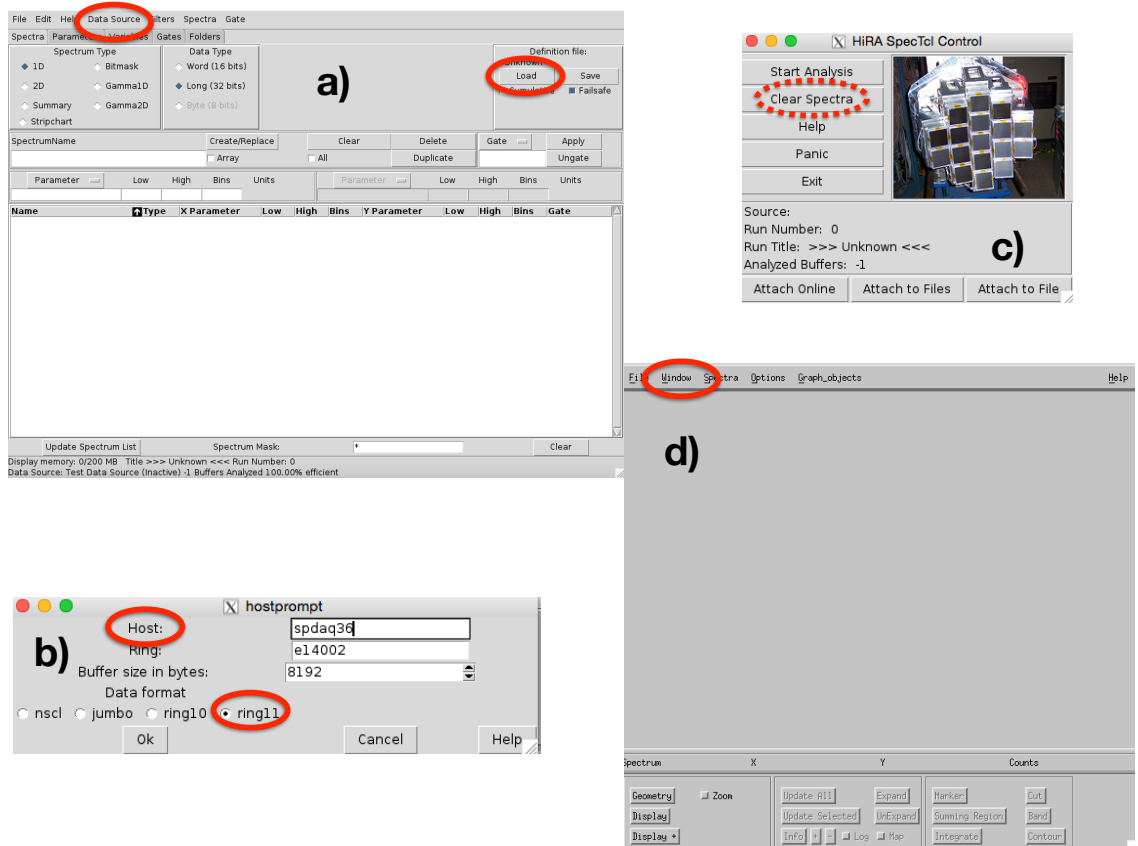


Figure 3: SpectCl windows.

1. Open a new terminal, ssh to spdaq29 and, go to /user/e15190/CSI\_disc and run  
> wish pico.tcl
2. A GUI appears as displayed in Fig. 4,
3. click Open Shaper File, select e15190.shp and click open.
4. click Open Disc File, select e15190.dis and click open.

## 4 Running the pulser

There are two separate pulser, one BLUE and one WHITE and they can be run independently.

1. Enable remote control of the pulser module by pressing 6 and pushing the main button.

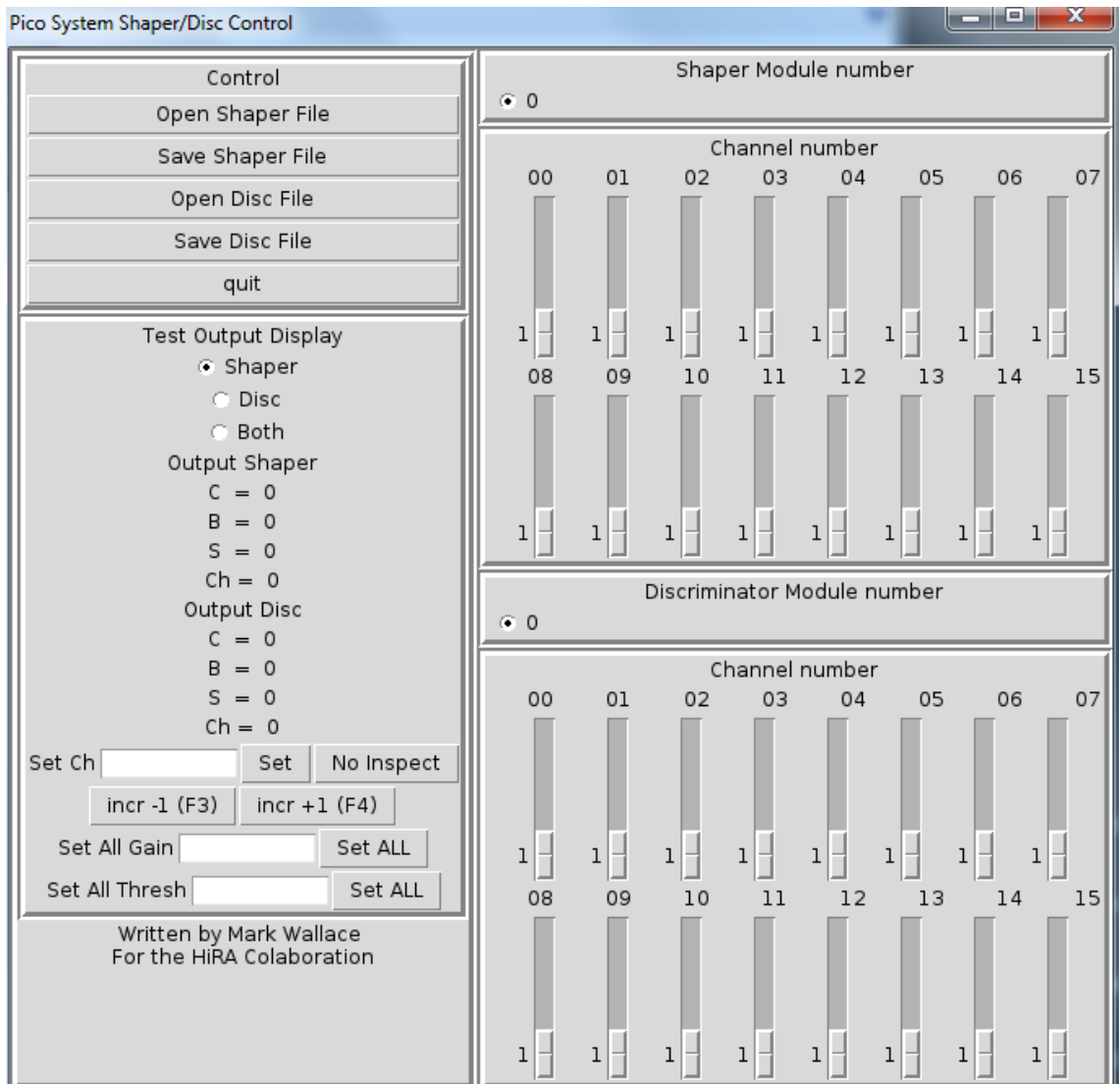


Figure 4: Csl control window.

2. Open a new terminal, ssh to spdaq29 and, go to /user/e15190/pulser and run  
 > wish pulserGUI\_BLUE.tcl for example.
3. click Connect button
4. To run a ramp, input a Min and Max voltage, number of steps (this has to be odd number) and the time running for each voltage. The pulser control window is displayed in Fig. 5

5. Then click Ramp pulser

The pulser should be set to negative for the EB and positive for EF and DE.

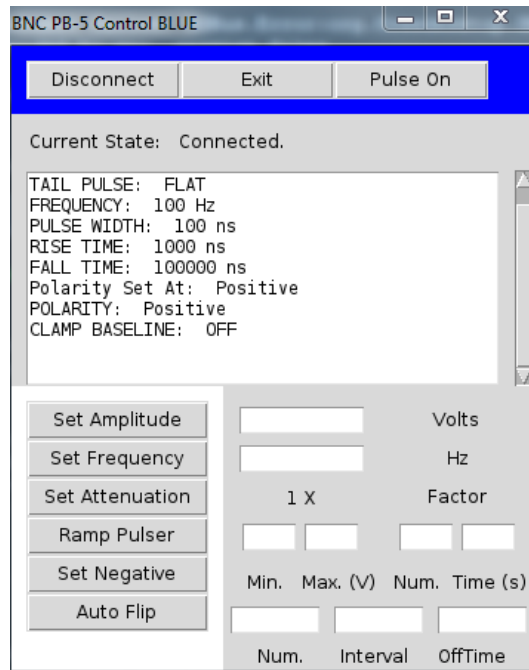


Figure 5: Pulser control window.

## 5 How to bias the E's

1. Bias the backs to +100 V usign the Ortec module located at the bottom of the left rack.
2. Turn on the ISEG power supply, located on the left of the electronic racks. There is a switch on the back and a button on the front
3. Open a web browser and go to the following IP address: 35.9.56.240
4. sign in with username: admin and password: password
5. Click Ch. profiles.
6. Select the only option from the drop down menu, and click apply.
7. Click devices and select what channel to turn on (should be 12 telescopes) and click the on button, after that the nominal will be applied to the E's.

## 6 Neutron Walls

### 6.1 NW High Voltage

1. Open a new terminal, ssh to e16042@spdaq48, and go to the /user/e16042/HVsupply directory.
2. Type wish LeCroy1440.tcl and a GUI should appear (see Fig. 6).
3. Click **Connect**, then click **ON**, and then you should load the Voltage file by clicking **Read File** and selecting the volage setting file NWAandNWB\_15MeV\_A.txt for example. This follows the same rule as the hira settings in that you should select the file with the last letter in the alphabet appended to the end of the file name (e.g. file\_c should be chosen instead of file\_a or file\_b).
4. Loading the voltages will take some time. You can track its progress through the blue progress bar in the upper right of the GUI. It will be finished when it reaches 207.
5. Note: we are using bar 24 instead of bar zero, so you should decend into the NW\_forbar1to24 before following the above steps.

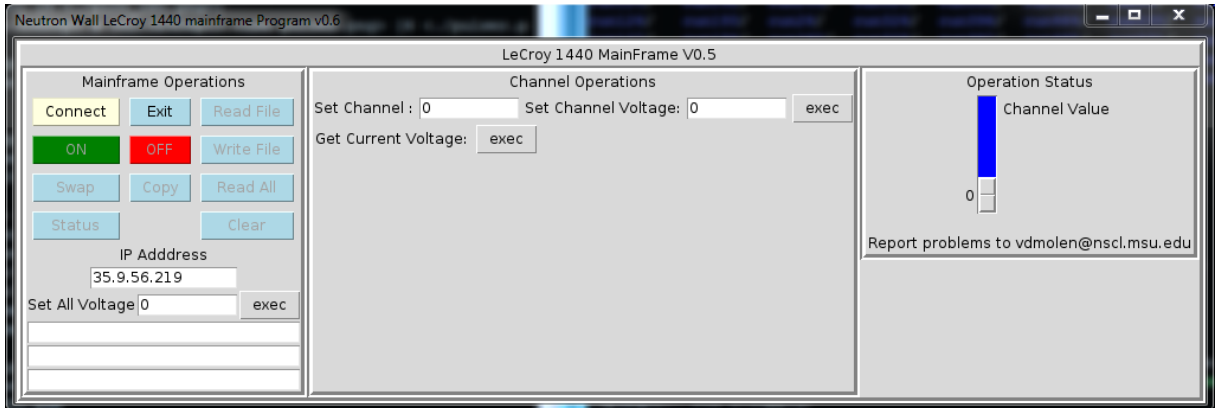


Figure 6: HV control window.

### 6.2 NW Discriminators and Gate and Delay Generators

Before making any changes to the discriminators or Gate and Delay generators, the run must be ended! Making any changes to the discriminators while Readout is taking data (Recording or not) can cause errors in the settings of the modules.

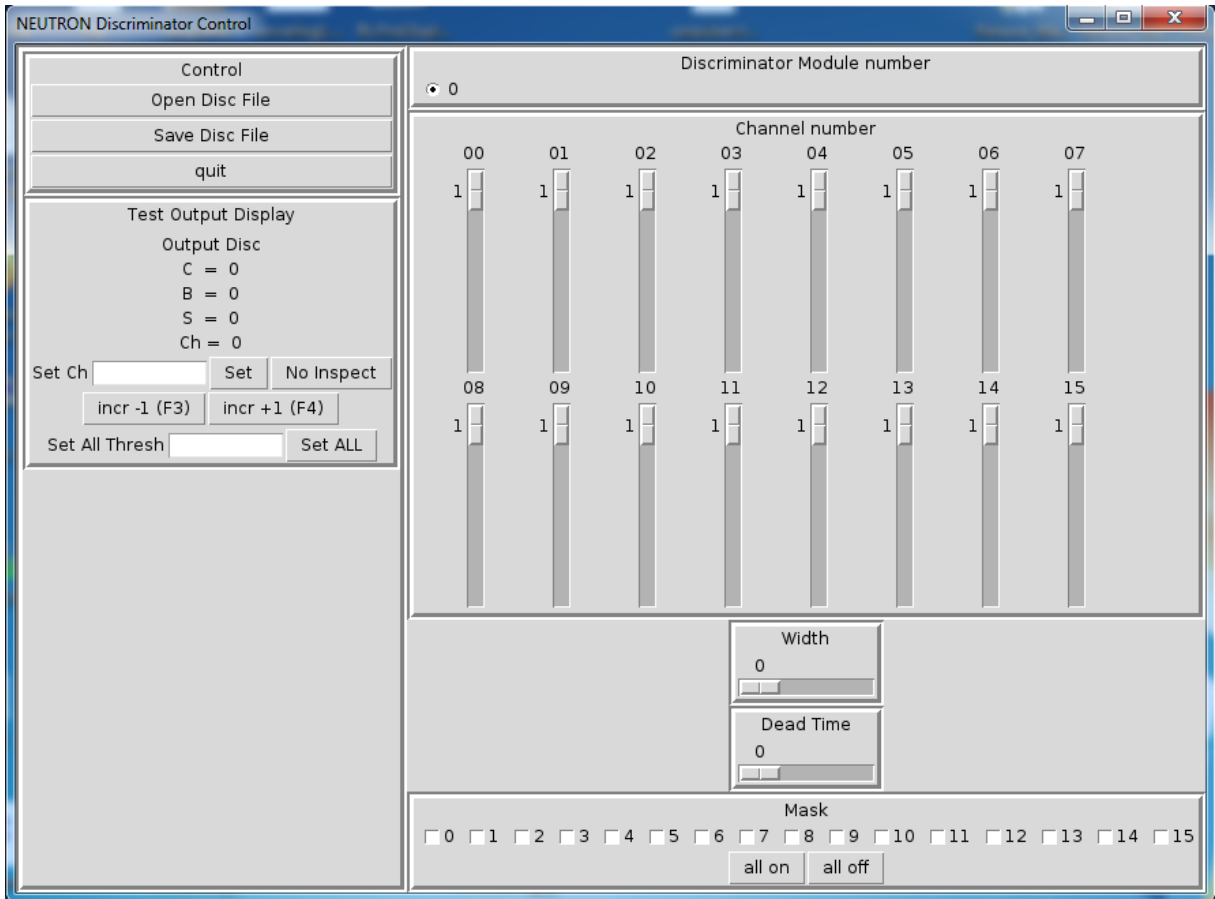


Figure 7: NW Discriminator GUI

1. Open a new terminal, ssh to e16042@spdaq48, and go to the /user/e16042/NEUT\_cfd directory.
2. Type wish lecroy\_cfd.tcl and a GUI should appear (see Fig. 7).
3. To load the discriminator settings click on the Open Disc File button and pick the correct file in the inputfiles directory.

## 7 TROUBLE SHOOTING

This section will detail how to trouble shoot the most common DAQ issues. If all else fails a simple power cycle of the VME crates and mother boards, and a following of the above guide, should be all you need to get you back to data taking.



- When ending the run does not work (often the symptom of a larger issue), the DAQ will hang and prevent you from starting a new run. To fix this issue:
  1. Exit the readout GUI
  2. type `ringbuffer status`, This will print out a table with 9 columns. If any of the numbers in the `producer` column are not -1, then you should type the command `kill -9 #`, where you replace the `#` with the number from the table.
  3. You should now be able to type `./Readoutshell` and start the run again.
  
- If the run does not end properly, you may get a message that says: `The experiment/current directory contains run segments and needs to be cleaned..` This is because the previous run did not get copied correctly at the end of the last run. To fix this issue:
  1. The root problem here is that a run will not start if something exists in the `/stagearea/current` or `/stagearea/experiment/current` directories. To fix this first check to see which run number file is still in either of these directories.
  2. `cd` to `/stagearea/experiment` and type `mkdir run#`, where `#` is the number from the file.
  3. Then move all of the files from `current` to this new directory (`mv stagearea/experiment/current* run#`)
  4. You should now be able to start a new run, but you may have to manually change the run number in the readout GUI to be 1 more than the number of the run you just copied.

## 8 Who to Call

If troubleshooting does not work, contact in the following order:

Sean Sweany

If Sean can't be reached or can't fix the problem, contact:

Kyle Brown

Phone numbers should be written on the marker board