Outer Tracker Upgrade Group Meeting

4th June 2025
IP2I

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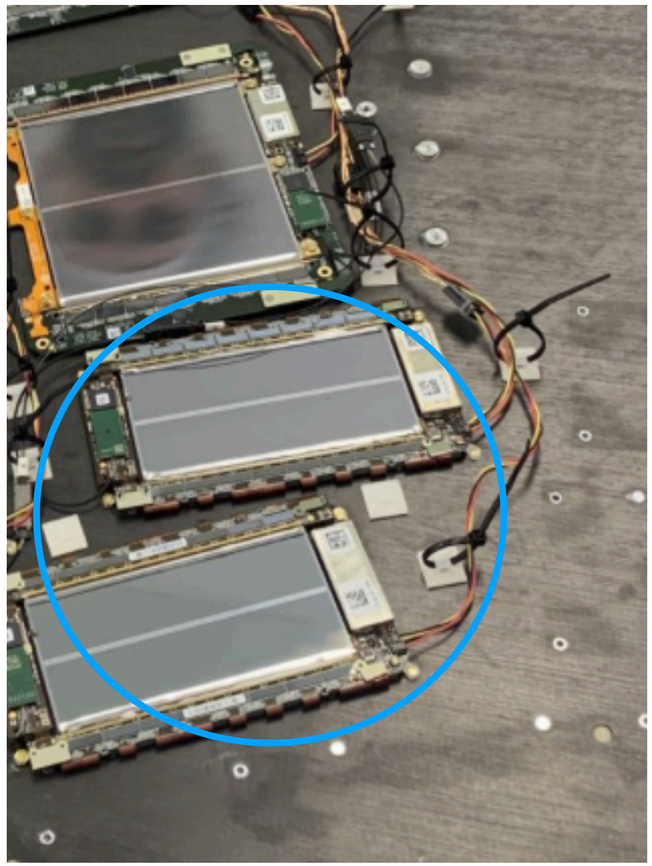
News

1. Expecting to receive new modules (1 2S and 1 PS) in summer 2025.
2. Tracker week 14th July to 18th July.
    1. Enzo (PhD student) will present studies done at our lab.
3. Tomorrow in the “OT Subsystems Integration Technical meeting” all the sites are requested to present info related to Ph2_ACF (DAQ) uses.

News

1. Excited to test first PS module and a working 2S module at our test bench.



Ongoing work & To do

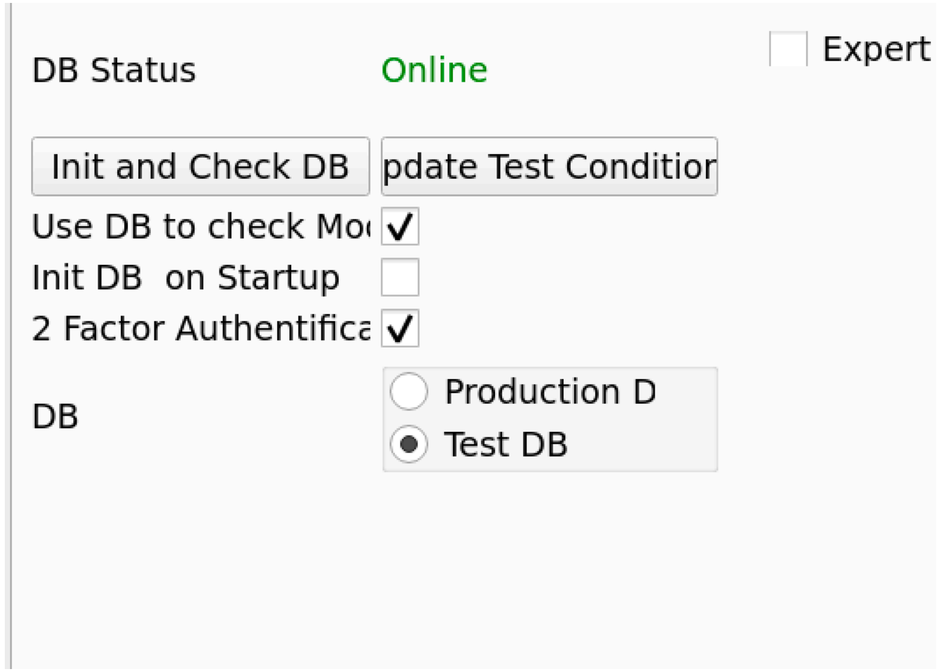
- Prepared some slides for tomorrow. (Discuss today)
- Installed latest version of Potato.
- The latest version of Ph2_ACF (v6.11) and Gipht(v4.96) is installed.
- Test two modules at the two test benches without an independent set up.

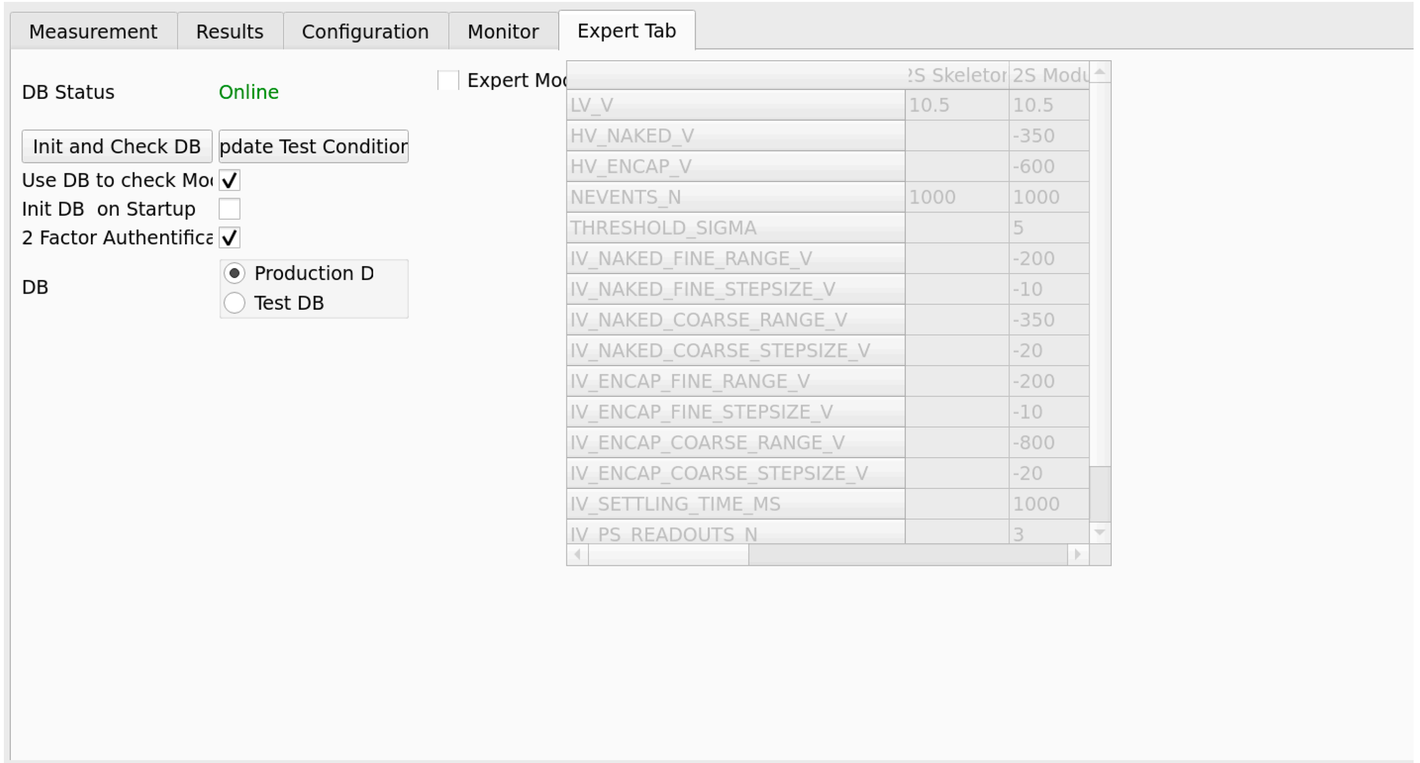
Ongoing work & To do

1. Prepare Nodered dashboard for CAEN control.
    1. Already running. Waiting for Gustave to prepare the validation step.
2. Prepared a list of items need to be bought for the second test bench. (Houmani)
    1. Shown last week.
3. Validating the Nodered dashboard (Gustave). Shared with him the instructions to run nodered locally.

Ongoing work & To do

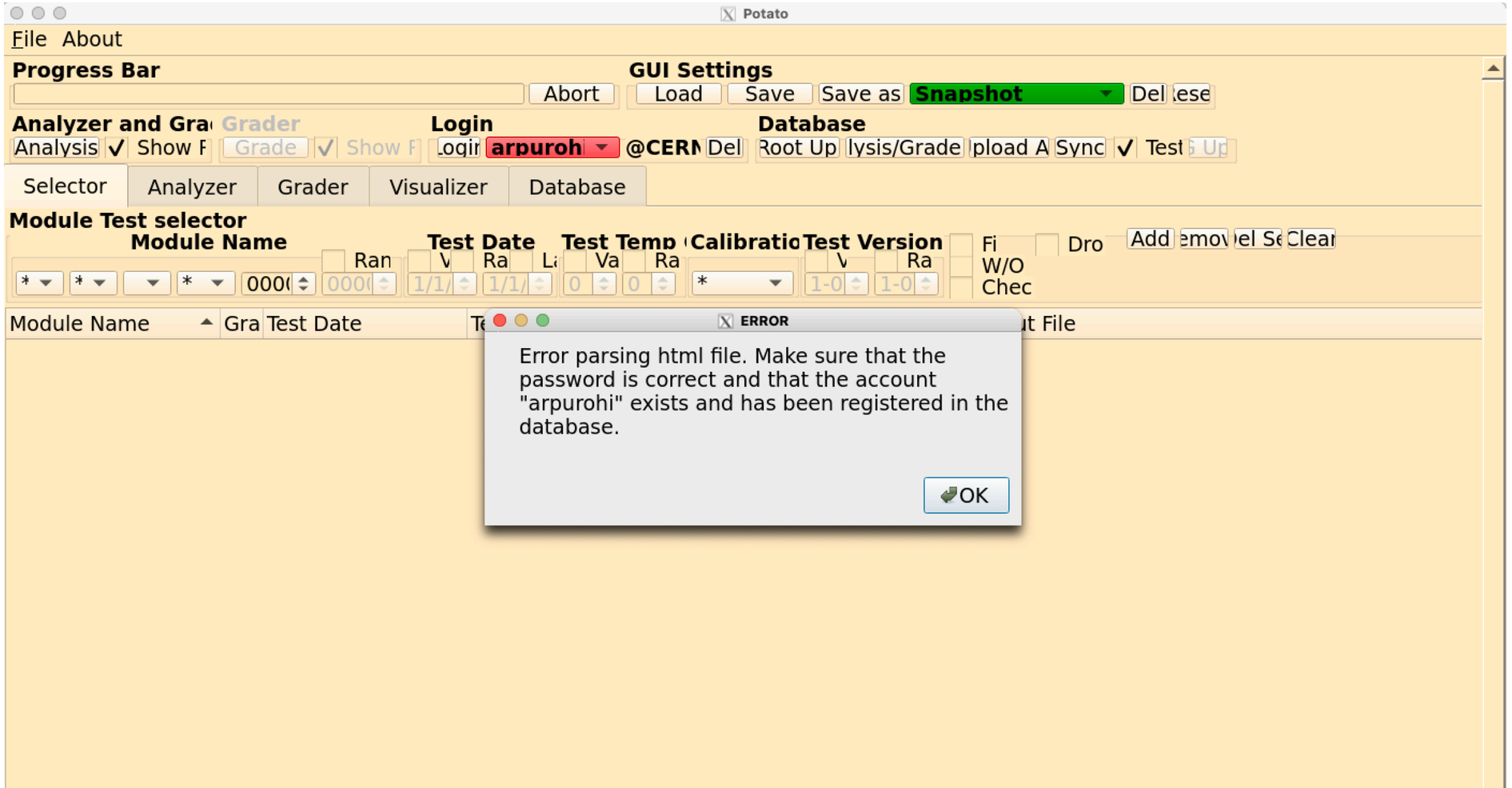
- Ph2_ACF (v6.11) and Gipht(v4.96) is installed





Ongoing work & To do

- Installed latest version of Potato



Ongoing work & To do

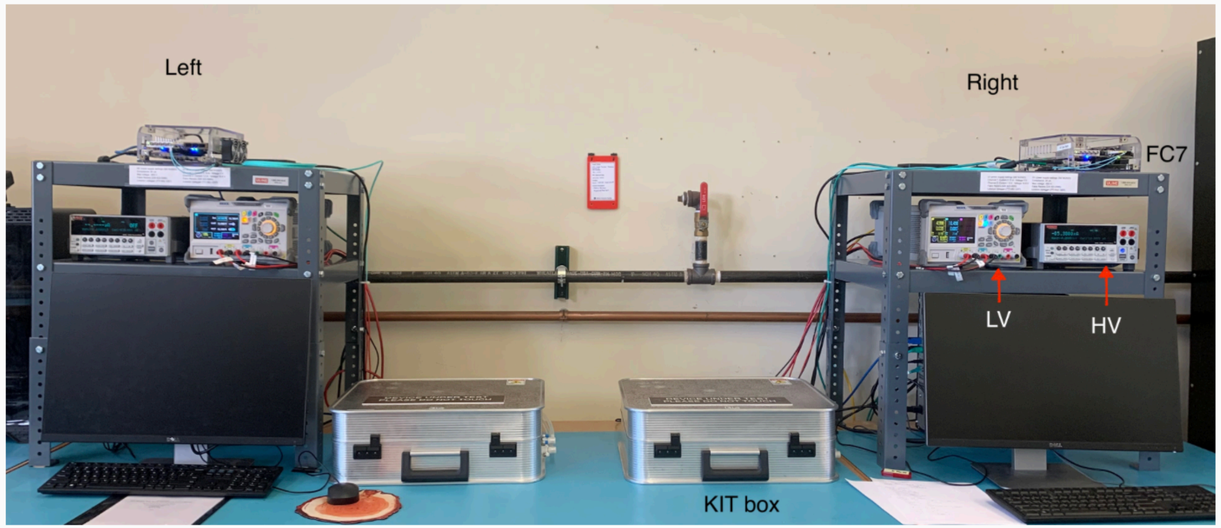
1. FNAL uses two independent setup.
2. UCLouvain has a single box setup.

FNAL KIT boxes and gipht setups

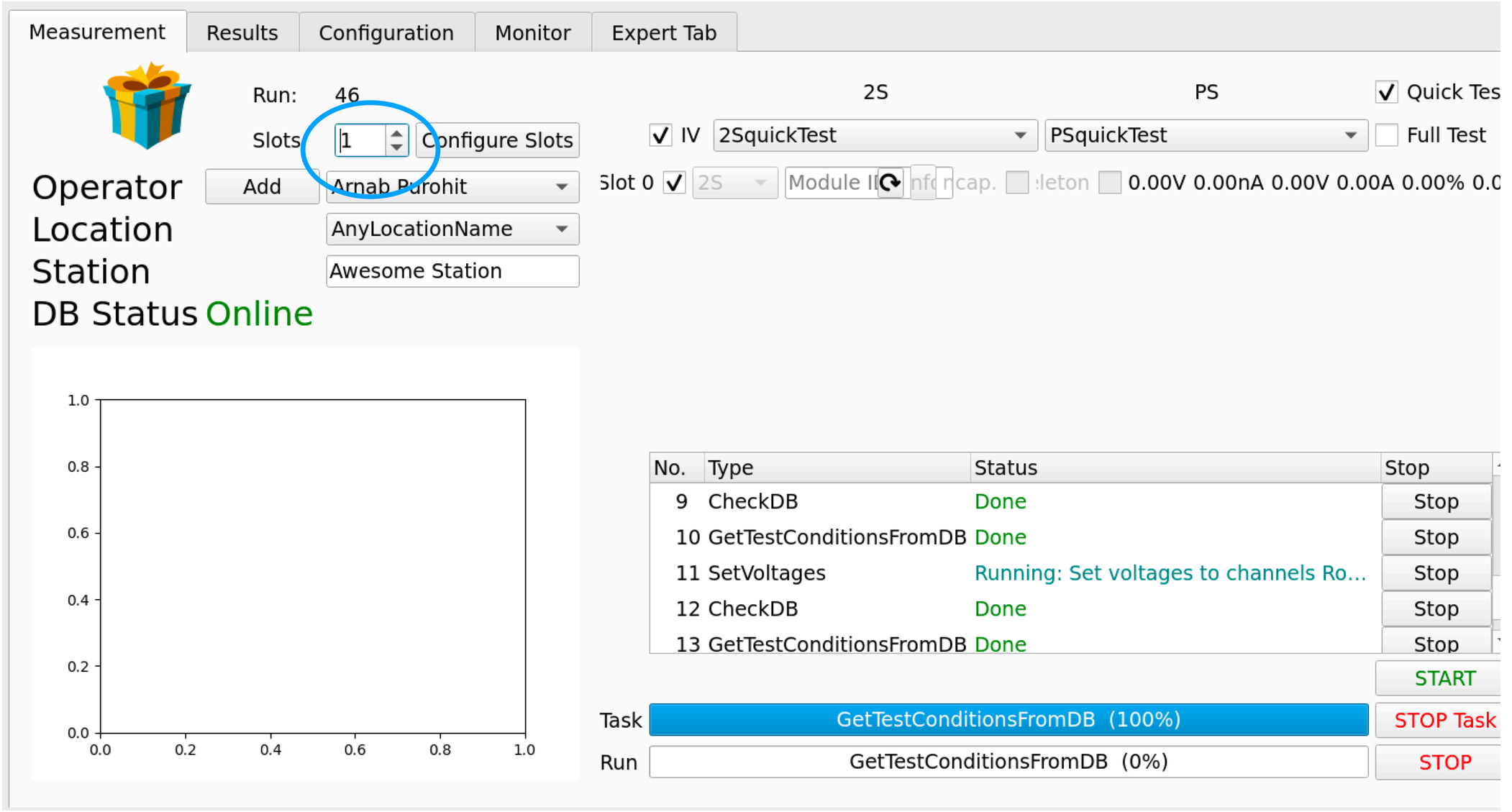
KIT boxes

The reference description for the KIT boxes can be found here.

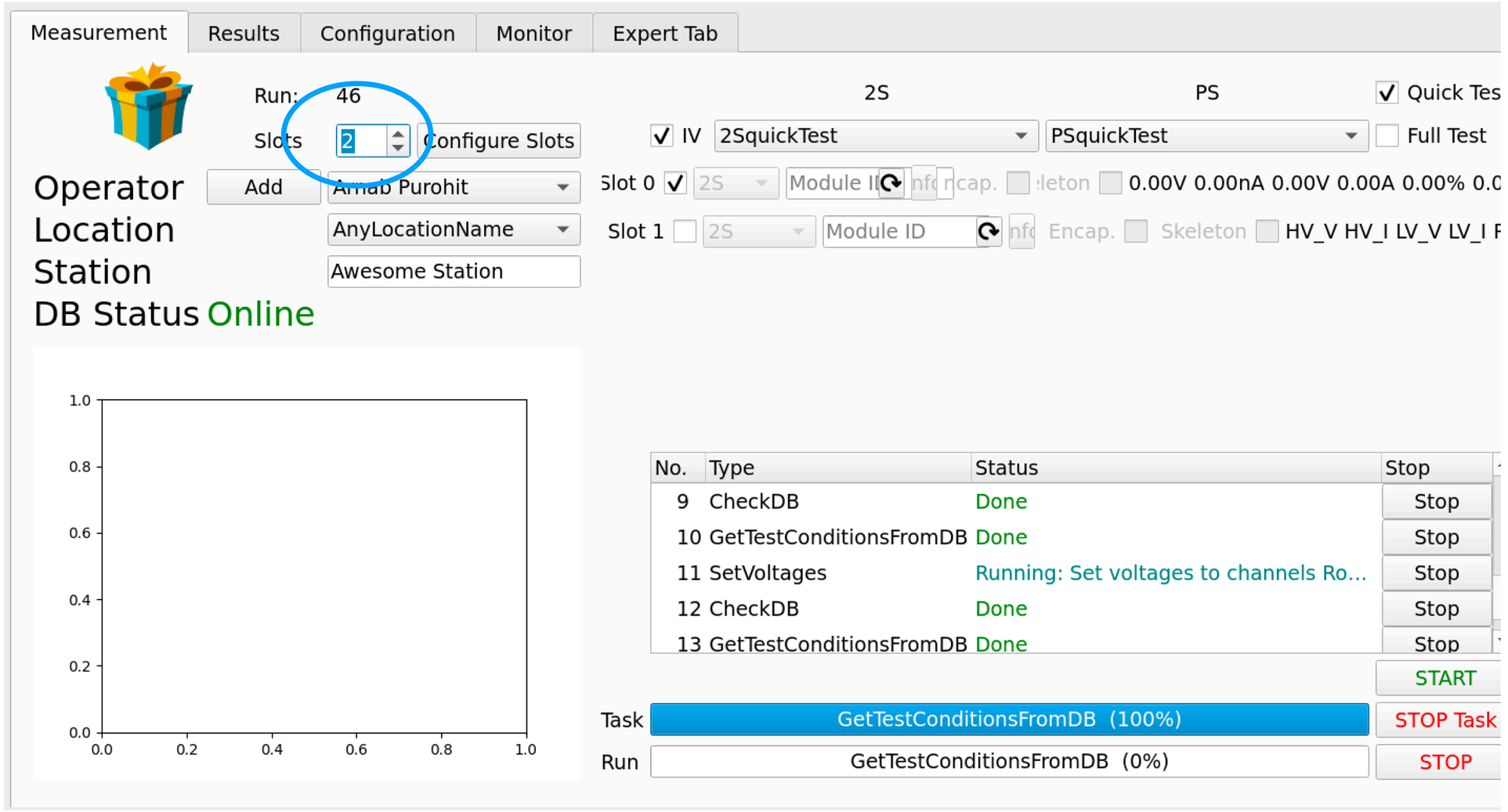
At FNAL we have two boxes, the right and the left one labeled as seen from an operator looking at them, as shown in the picture below:



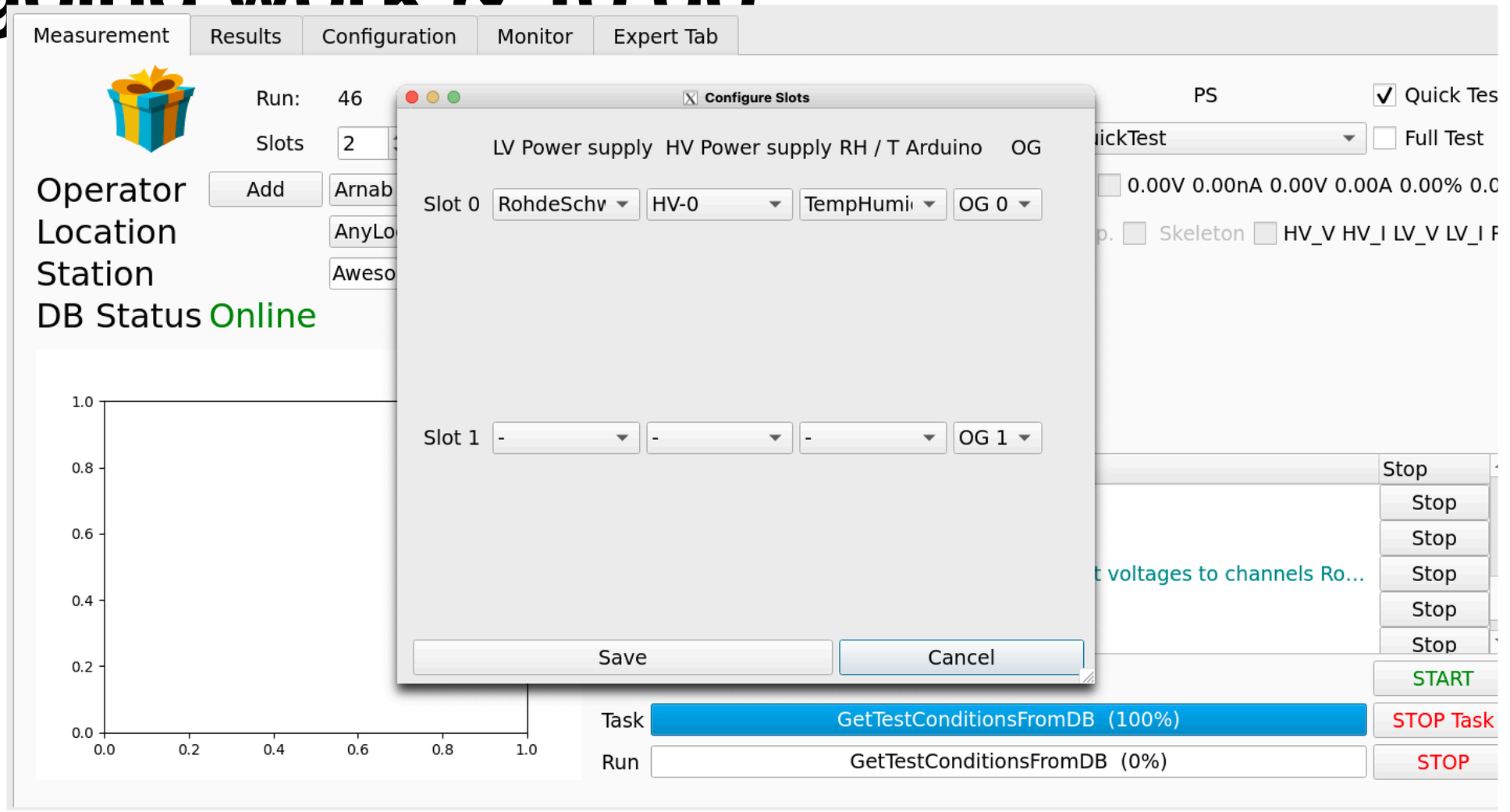
Ongoing work & To do



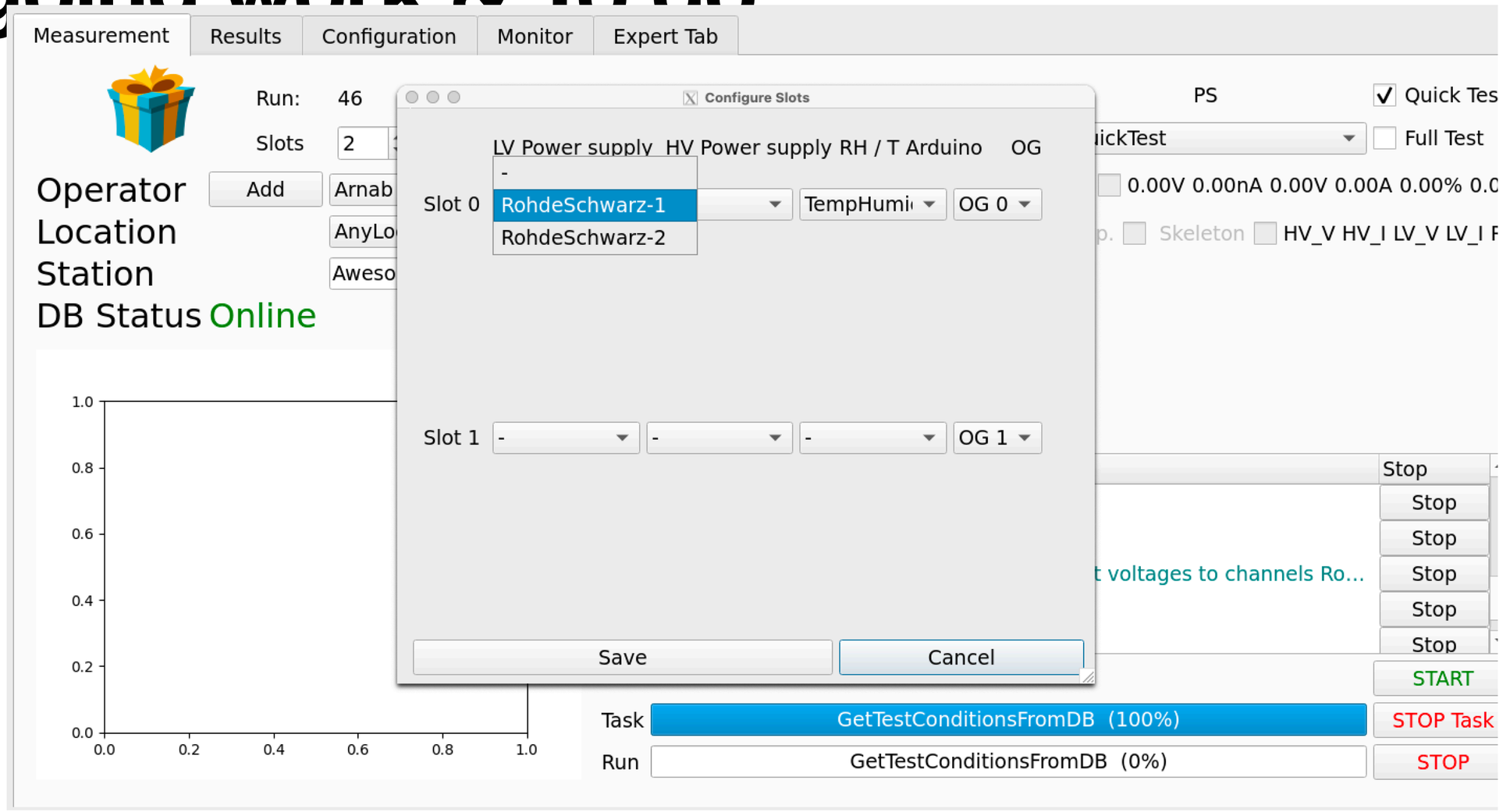
Ongoing work & To do



Ongoing work & To do



Ongoing work & To do



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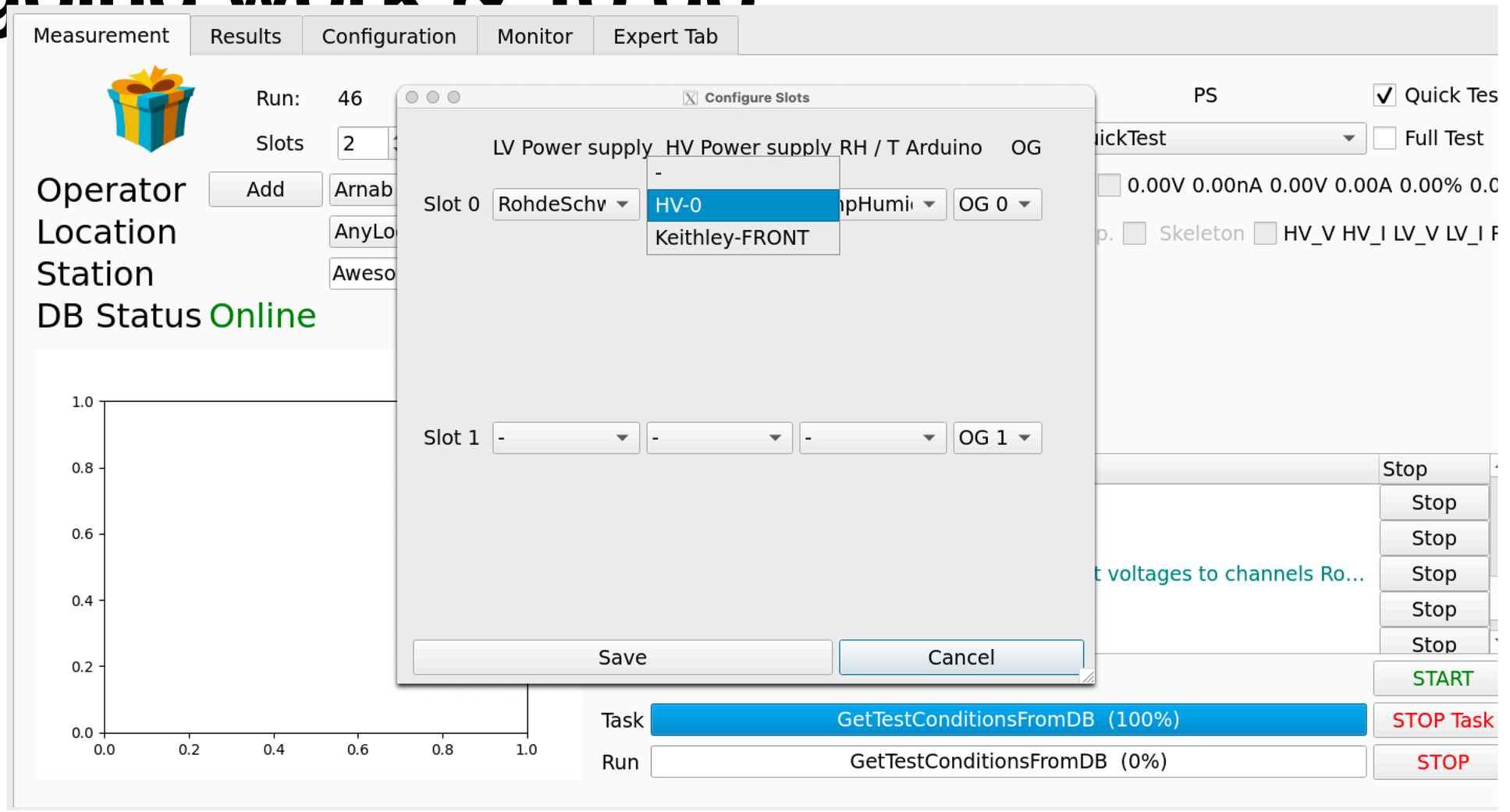
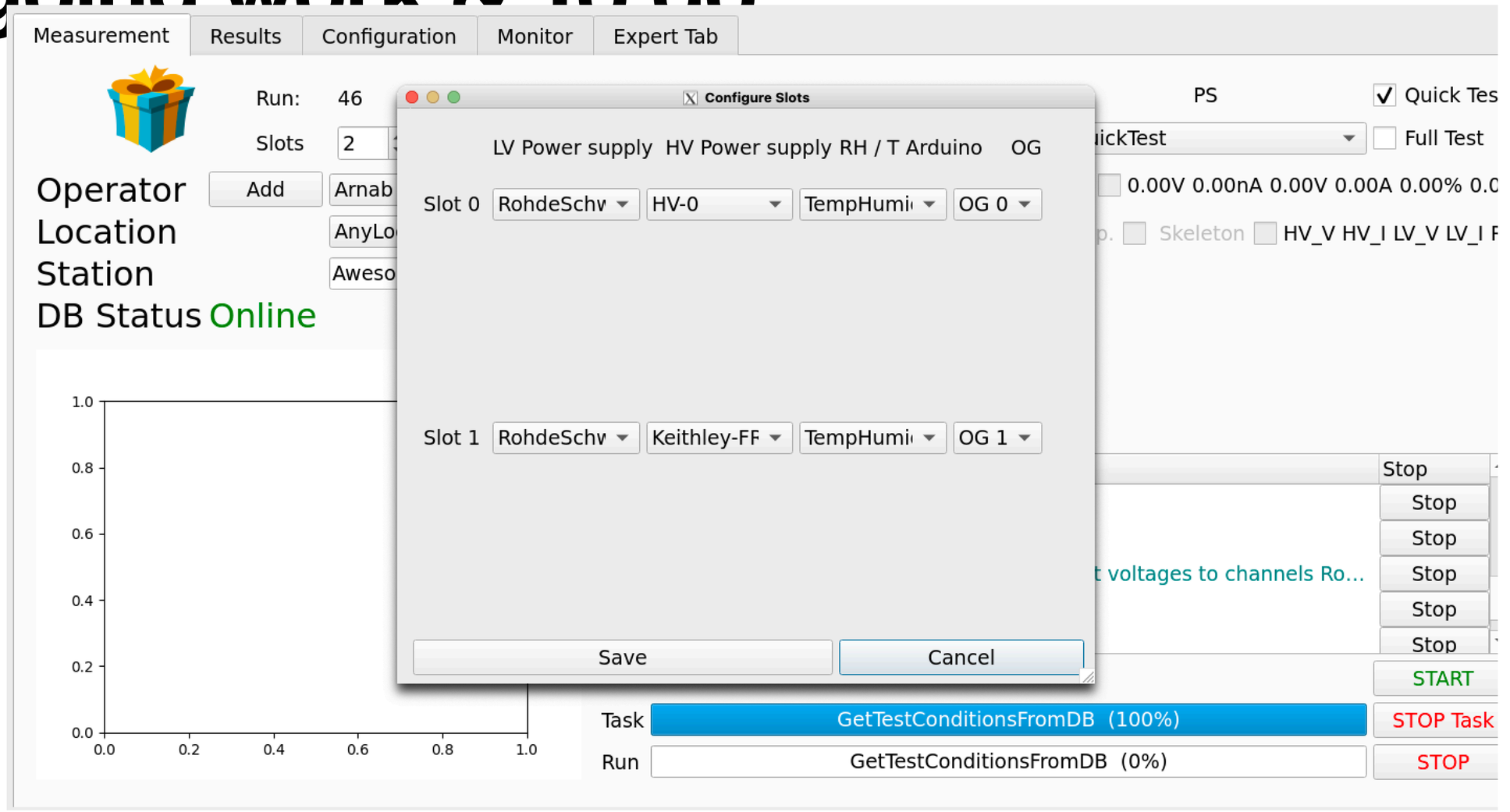
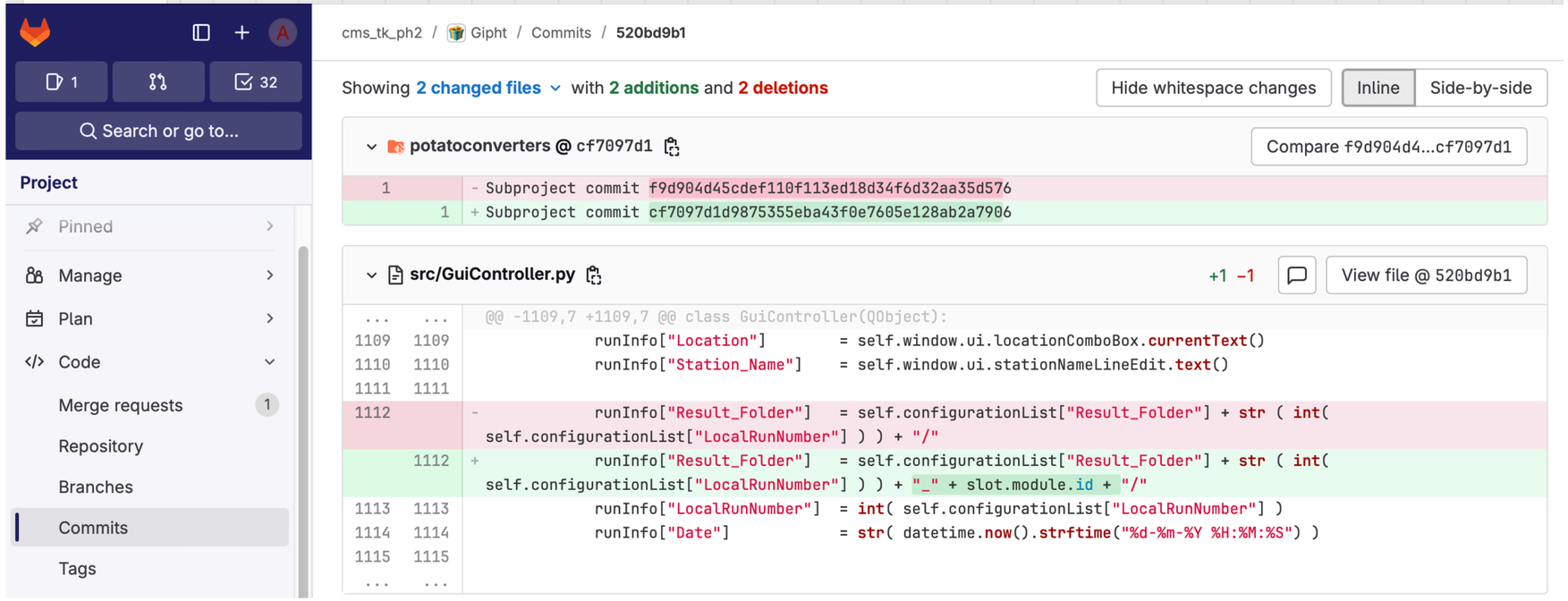


Ongoing work & To do



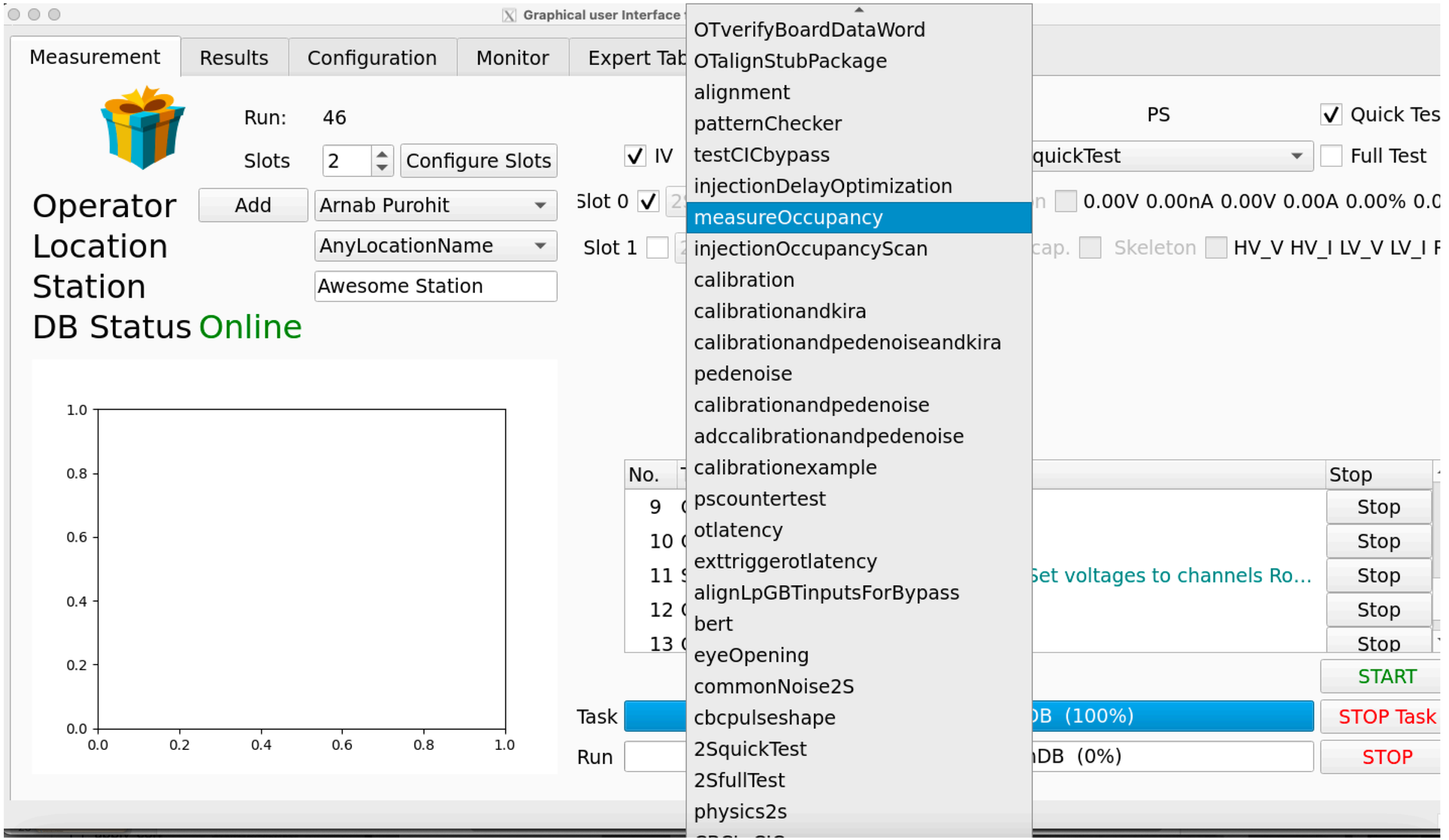
Ongoing work & To do

1. New Gipht



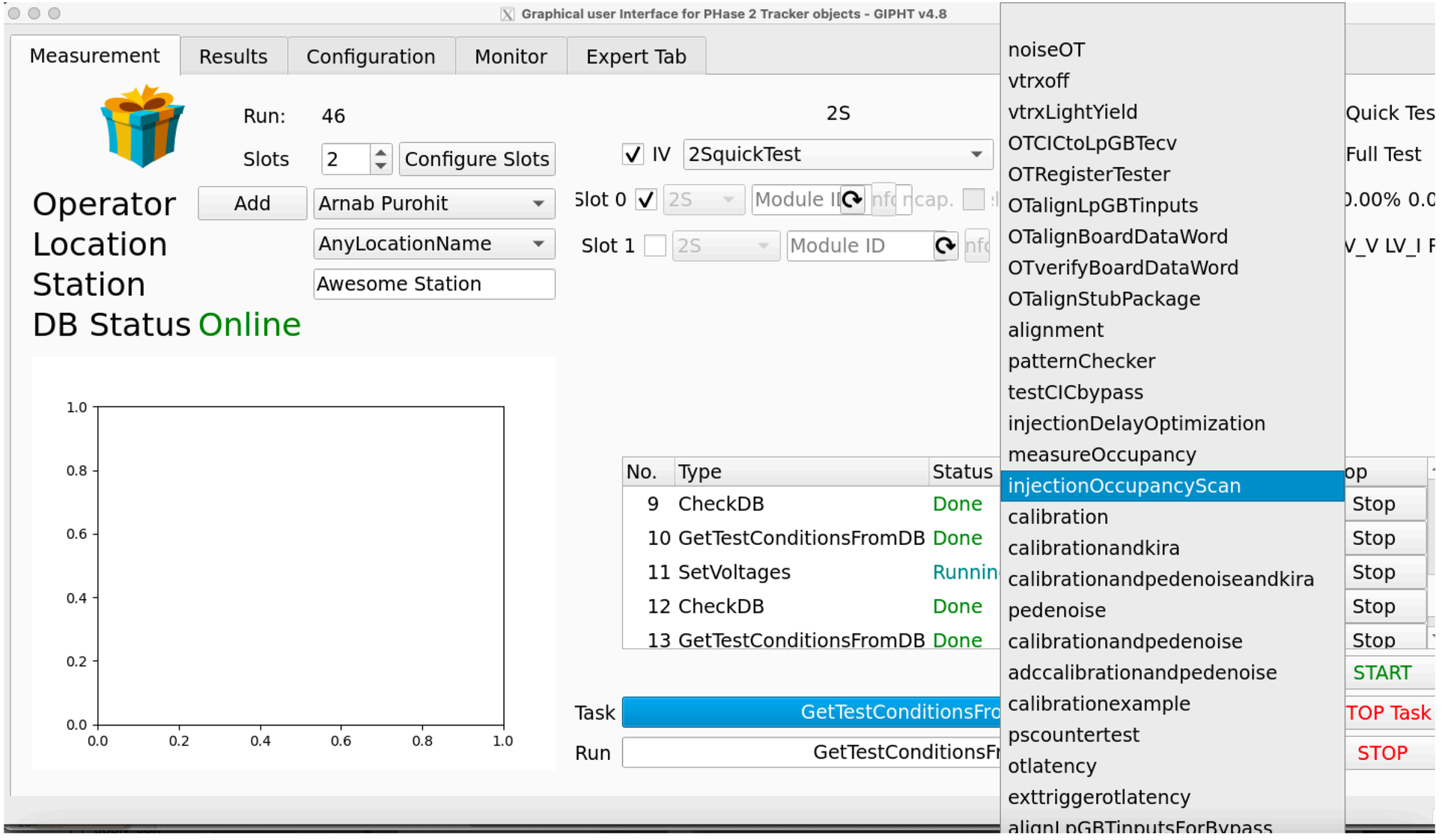
Ongoing work & To do

1. 2S Tests



Ongoing work & To do

1. PS Tests



Ongoing work & To do

1. For 2S modules

Quick test

Step	duration per module (mm:ss)
Configuration	00:11
TuneLpGBTVref	00:01
OTVTRxLightYieldScan	00:01
OTLpGBTEyeOpeningTest	00:28
OTalignLpGBTinputs	00:04
OTalignBoardDataWord	00:00
OTverifyBoardDataWord	00:03
OTalignStubPackage	00:00
OTCICphaseAlignment	00:07
OTCICwordAlignment	00:00
OTverifyCICdataWord	00:09
PedestalEqualization	00:11
PedeNoise	00:07
Total time	**01:22**

Full test

Step	duration per module (mm:ss)
Configuration	00:07
TuneLpGBTVref	00:01
OTVTRxLightYieldScan	00:01
OTLpGBTEyeOpeningTest	00:29
OTalignLpGBTinputs	00:04
OTalignBoardDataWord	00:00
OTverifyBoardDataWord	00:04
OTalignStubPackage	00:00
OTCICphaseAlignment	00:06
OTCICwordAlignment	00:01
OTverifyCICdataWord	00:09
PedestalEqualization	00:11
PedeNoise	00:07
OTinjectionDelayOptimization	01:27
OTinjectionOccupancyScan	01:06
OTCMNoise	01:01
OTCICtoLpGBTecv	01:44
OTalignLpGBTinputsForBypass	00:40
OTChipToCICecv	01:51
OTBitErrorRateTest	03:17
OTRegisterTester	01:36
Total time	**14:02**

Ongoing work & To do

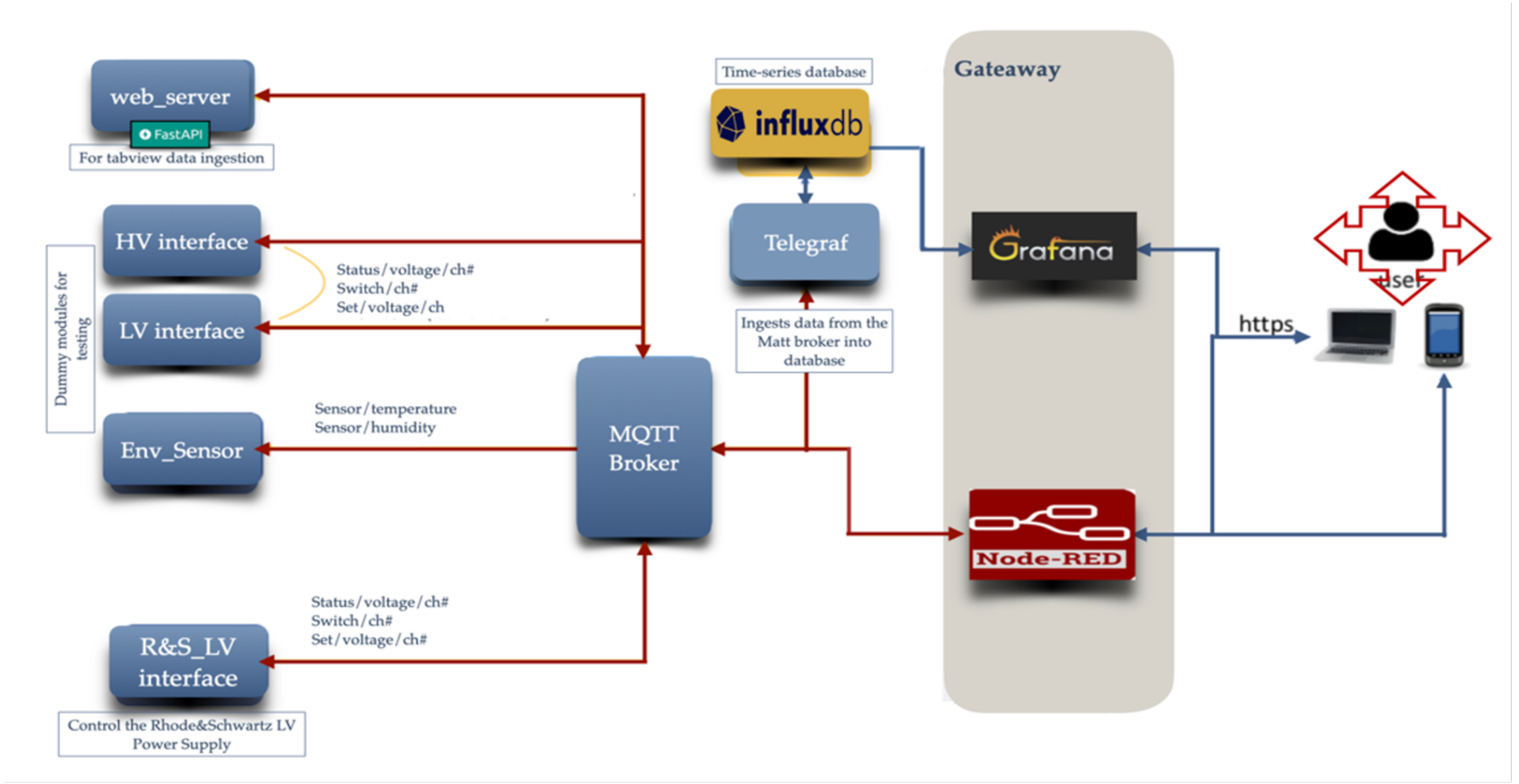
1. For PS modules

Quick test

Step	duration per module (mm:ss)
Configuration	00:10
TuneLpGBTVref	00:05
OTVTRxLightYieldScan	00:01
OTLpGBTEyeOpeningTest	00:33
OTalignLpGBTinputs	00:06
OTalignBoardDataWord	00:00
OTverifyBoardDataWord	00:03
OTalignStubPackage	00:00
OTCICphaseAlignment	00:03
OTCICwordAlignment	00:00
OTverifyCICdataWord	00:15
OTverifyMPASSAdataWord	00:35
OTPSringOscillatorTest	00:01
PedestalEqualization	00:42
PedeNoise	00:14
Total time	**02:48**

Full test

Step	duration per module (mm:ss)
Configuration	00:07
TuneLpGBTVref	00:01
OTPSADCCalibration	01:23
OTVTRxLightYieldScan	00:02
OTLpGBTEyeOpeningTest	00:35
OTalignLpGBTinputs	00:05
OTalignBoardDataWord	00:00
OTverifyBoardDataWord	00:04
OTalignStubPackage	00:00
OTCICphaseAlignment	00:02
OTCICwordAlignment	00:00
OTverifyCICdataWord	00:16
OTverifyMPASSAdataWord	00:34
OTPSringOscillatorTest	00:01
PedestalEqualizationPSFullScan	02:59
PedeNoisePSLowInjection	00:13
OTinjectionDelayOptimization	03:37
OTinjectionOccupancyScan	04:08
OTPScommonNoise	00:16
OTSSAtoMPAecv	07:06
OTSSAtoSSAecv	01:25
OTCICtoLpGBTecv	02:15
OTalignLpGBTinputsForBypass	00:36
OTChipToCICecv	01:55
OTBitErrorRateTest	01:56
OTRegisterTester	02:41
Total time	**32:17**


web_server
FastAPI
For tabview data ingestion
HV interface
LV interface
Dummy modules for testing
Status/voltage/ch#
Switch/ch#
Set/voltage/ch
Env_Sensor
Sensor/temperature
Sensor/humidity
R&S_LV interface
Status/voltage/ch#
Switch/ch#
Set/voltage/ch#
Control the Rhode&Schwartz LV Power Supply
MQTT Broker
Time-series database
influxdb
Telegraf
Ingests data from the Matt broker into database
Gateaway
Grafana
Node-RED
https
User