**UTA Tutorial for 4-Chip LArPix\_v1 Board**

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# **General Information**

The laptop in the lab is setup with Ubuntu 18.04 and should have all the necessary information related to the LArPix board installed (along with Python packages, ROOT, and other useful tools)

Username: **pixel**

Password: **cbp348argon!** (note: this is also the ROOT password for the machine)

The laptop does not have a battery and thus must be left plugged in at all times!

**IMPORTANT: When every you are handling the controller board, the faraday box, or the pixel plane itself, YOU MUST BE WEARING AN ANTI-STATIC BRACELET!!! One is plugged in to the ground on the power strip and we have more in the lab if multiple people are working on the board**

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## **Documentation**

**Overview:** <https://github.com/samkohn/larpix-scripts/wiki>

**LArPix Control library:** <https://github.com/samkohn/larpix-control>

**Documentation for LArPix control:**

<https://larpix-control.readthedocs.io/en/latest/?badge=latest>

<https://larpix-control.readthedocs.io/en/latest/api/larpix.html>

**Some of our standard scripts (use at your own risk):** <https://github.com/samkohn/larpix-scripts>

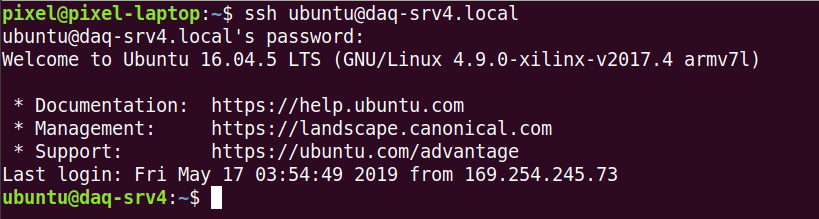
**Igor's DAQ board code and documentation:** <https://github.com/kreslo/liblarpix_V4.1>

# **Connecting to the board**

The configuration should be setup such that the only thing you need to do is to power the Arty board (by either plugging in the power supply or turning on the 5V power supply) and opening a terminal and typing the commands:

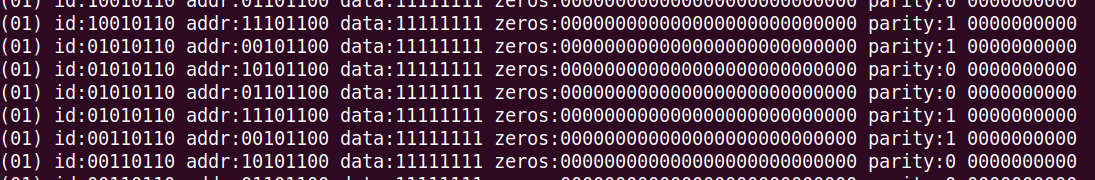
**ssh ubuntu@daq-srv4.local**

this will prompt you for a password which is **altisidora**

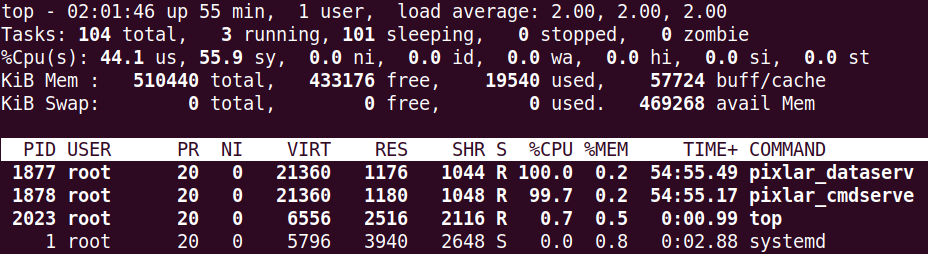


Once you are logged on, to get things ready for running the tests, from the daq-srv4 board run the command **sudo ./setup**

you should see a crazy spew of information looking like this



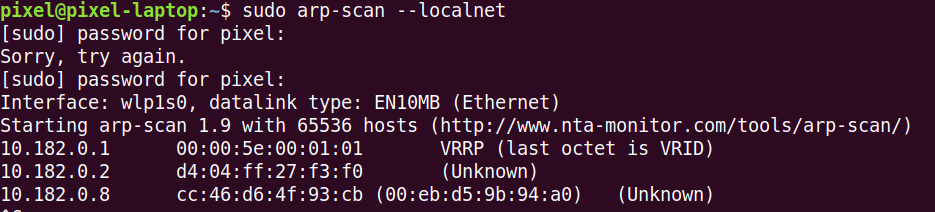
followed by the “top” screen which shows you what processes are running



With all this in place, you should be ready to start chip testing!

## **Problems connecting**

If you encounter problems connecting to the board try the following:

1. Run the command **sudo arp-scan --localnet** and this should return something that looks like this and then just sits there and hangs out  
   

you can kill this process (Ctrl-c) and then try logging into the board again

1. Try restarting the network processes using the command **/etc/init.d/networking restart**  
     
   Then try logging into the board again
2. Try unplugging and replugging the red cord from the computer or the board  
     
   You should see two LED’s near the connector on the board light up and blink periodically if you have a good connection
3. Despair/Google/DUNE Slack #larpix  
     
   I’ve left my DUNE user account logged in to the pixel laptop and you can reach out to the larpix channel (until you get your own DUNE Slack account)
4. Try to setup the tp-link Wireless router  
     
   This should assign a static IP address to the board and you can follow the instructions to [log into the board shown here](https://github.com/samkohn/larpix-scripts/wiki/Operation-of-the-v2-DAQ)

## **When you are all done (at the end of the day)**

Before you power things off for the day please follow these instructions ([orignal source](https://github.com/samkohn/larpix-scripts/wiki/Operation-of-the-v2-DAQ))

From the daq-srv4 machine, run the command **sudo halt** and then wait about 20 seconds for all the processes to finish running!

Then you can power down the board (un-plug it)

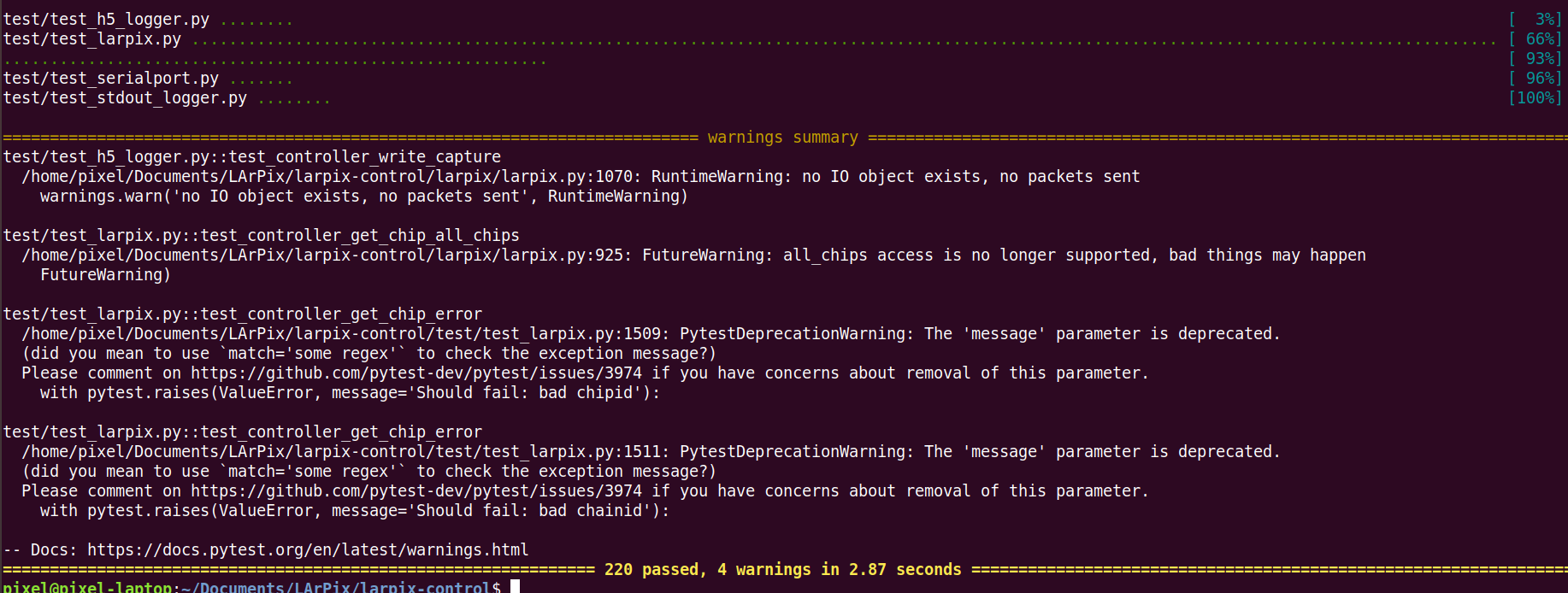
# **Running Tests**

Much of what will be covered here is given [more depth and detail on this wiki](https://github.com/samkohn/larpix-control), this is just to give some specifics to our computer/board setup

Assuming you have a terminal running that is logged into the daq-srv4 board we will run through a few easy tests

## ***Are the basics working?***

1. Open a new terminal tab (Ctrl-Shift-T) or a new terminal window (Ctrl-Shift-N)
2. Change to the directory with the LArPix controller
   1. cd /home/pixel/Documents/LArPix/larpix-control/
3. Run the command **pytest** and hopefully you see something like this



***If so, then all is good!***

## ***Unit test***

1. I’ve transcribed the simple test from the Wiki to a python script that lives here /home/pixel/Documents/LArPix/larpix-control/UTA-UnitTest.py
2. Run the script with python UTA-UnitTest.py and hopefully you see:

