PALFA GALACTIC PLANE SURVEY REFERENCE DURING DRIFT SCANS
A Step-by-Step Reference for Remote Observing Using a Mac

I.   HOW TO START A VNC SERVER:

1. Open a terminal on the local computer and type:
   ```
   ssh [USERNAME]@remote.naic.edu
   ssh fusion00
   vncserver -geometry 3600x1400
   ```
   Note the vnc server number, 'n', its located in the output `fusion00:n` after you enter the command. Also, the geometry 3600x1400 is for a larger screen; you may also use the command `vnc server` and this will use the default dimensions.

2. Open a new terminal on the local computer and type:
   ```
   ssh -f -L 590n:fusion00:590n [USERNAME]@remote.naic.edu sleep 14400
   ```
   For 'n' enter the vnc server number. After this command no output message will appear in the terminal.

3. Open Chicken of the VNC and enter the following parameters:
   Host: localhost
   Display: n
   Password: [VNC PASSWORD]
   Check allow other clients
   The vnc password typed here in Chicken of the VNC is made up by the vnc server creator at this point.

4. Press [Connect].

II.   HOW TO VIEW A VNC SERVER:

1. Open a terminal on the local computer and type:
   ```
   ssh -f -L 590n:fusion00:590n [USERNAME]@remote.naic.edu sleep 14400
   ```
   For 'n' enter the vnc server number. After this command no output message will appear in the terminal.

2. Open Chicken of the VNC and enter the following parameters:
   Host: localhost
   Display: n
   Password: [VNC PASSWORD]
   Check allow other clients

3. Press [Connect].

III.   HOW TO BEGIN AN OBSERVATION SESSION:

1. Call the operator at the Arecibo Observatory (1-787-878-2612) to check-in and get the password for remote observing on the computer called observer2.

2. In the vnc viewer, open a new terminal and type:
   `aostatus`
   This will open a program to view the telescope position and status.

3. In the same vnc viewer terminal type:
   `ssh dtusr@observer2`
   `cima`
   `mocksp`
   You will need to enter the password the operator gave you when you called earlier. After you type `cima`, a list of versions will appear; select the single-pixel mock spectrometer version by typing `mocksp`, as shown above.

4. In the cima window enter the following information:
   Project number: p2030
   Name: [YOUR NAME]
   Phone number:[PHONE NUMBER]
   Click [PULSAR]
   Click [Accept]
   You may need to be allowed access by the operator, if you logged on early; this may take a moment.

5. Several windows will open. In the "Receiver Selection Menu" window hit the button [ALFA] and click [Accept].

6. In "CIMA Main Menu" window click the button [Load Configuration]. Then, load the file "ALFA_P_MOCKS_CIMA_v32_rot19deg.conf" and click [Load and Accept].
   This will load a lot of settings for our specific observation like the catalog, scan times, calibration times, etc.

7. The "CIMA Observing" window will open and when configuration is done the "CIMA Observation Status" window will say idle.

8. In the "CIMA Main Menu" window click [Backend Control] and the "Mock Spectrometer Configuration Menu" window will appear. Click [Adjust Mock Power]. This will print an output message in the "CIMA Observation Log Display;" the first four columns of numbers should be near 30 (25-33). Tell the operator if it's not. Then click [Dismiss].
   These columns are showing the intensity that the receivers are getting from the background.

9. In "CIMA Main Menu" window click [Pointing Control]. In the "Pointing Control" window click [Show All Sources]. Find the first pair of pointings within the zenith angle (ZA) restrictions; select the first of the pair. Then click [Apply].
   If no sources are within the ZA restrictions then observe a known pulsar.

10. Wait for the telescope to slew to position.

11. After it has slewed, click [Observe] in the "CIMA Observing Menu" window.
    This will begin the observation of that pointing.

12. Once the observation of the pointing has finished, do the second pointing of that pair. Then, continue observing pairs of pointings.

IV.   HOW TO END AN OBSERVATION SESSION:

1. At the end of the session tell the operator you have finished and in the "CIMA Main Menu" window click [Exit].
   Try to make the last observation as close to the observation session end time as possible but do not go over the allotted time.

2. In the vnc viewer terminal type:
   ```
   ssh buye
   cd /share/pdata1/pdev
   find -name 'p2030.YYYYMMDD*b0s1g0.00001.fits'
   ```
   This lists all the pointings you observed during the session. Here YYYYMMDD refers to the year, month and day of the observation session.

3. Open a new vnc viewer terminal and type:
   ```
   ssh buye
   cd /share/obs4/usr/pulsar/p2030
   emacs pairs_cut_sorted_part1.cat
   ```
   This opens up the catalog file to be edited. You will need to comment the pointings you observed during the session. A quick way to do this is in emacs is to hold crtl+s, which is an incremental search that searches the document for the string as you type it. Thus, now you can look at one terminal and search and comment the pointings in emacs. To comment put a "#" at the beginning of the command line for the two pointings and the line that says "do not observe" below the two pointings.

4. Save and exit emacs.

5. In one of the vnc viewer terminals type:
   ```
   Ssh fusion00
   Vncserver -kill :n
   ```
   Here 'n' refers to your vnc server number.

V.   HOW TO OBSERVE A KNOWN PULSAR:

1. In the "Pointing Control" window click [Catalog], then click [General Catalog], then select from the list "psr_bright.cat" or "psr.cat" and then click [Accept].

2. In the "Pointing Control" window click [Visible Sources] and select a source within the zenith angle (ZA) restrictions with a relatively small slew time.

VI.   NOTES ON ZENITH ANGLE RESTRICTIONS:

- The zenith angle (ZA) restrictions are: 3.5 to 12 degrees from 7pm to 7am
                                                6 to 10 degrees from 7am to 7pm

- If the source leaves the ZA limit abort the observation because the telescope will stop tracking it but it won't stop taking data.

- If no sources are within the ZA limit observe a known pulsar.

- Both the ON and OFF pointings need to be observed sequentially within a 20 to 30 second slew. This means that both pairs need to be observed with little delay; if both pairs are not observed then do not comment them out in the file "pairs_cut_sorted_part1.cat" at the end of the observation.

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cmbiwer@uwm.edu
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