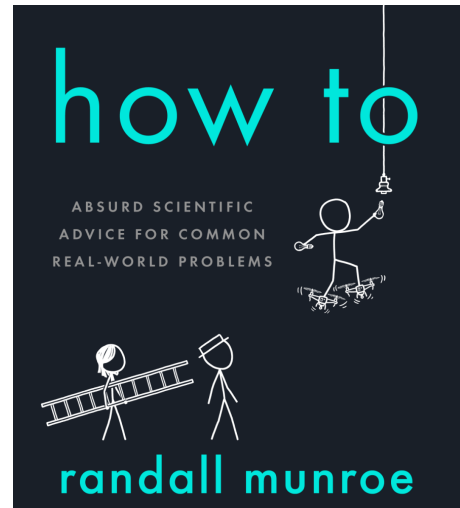


# How To: Opihi Automatic Photometry (2023-06-07)

**Note: Please operate Opihi's automatic mode only between approximately 30 minutes after sunset and before sunrise!**

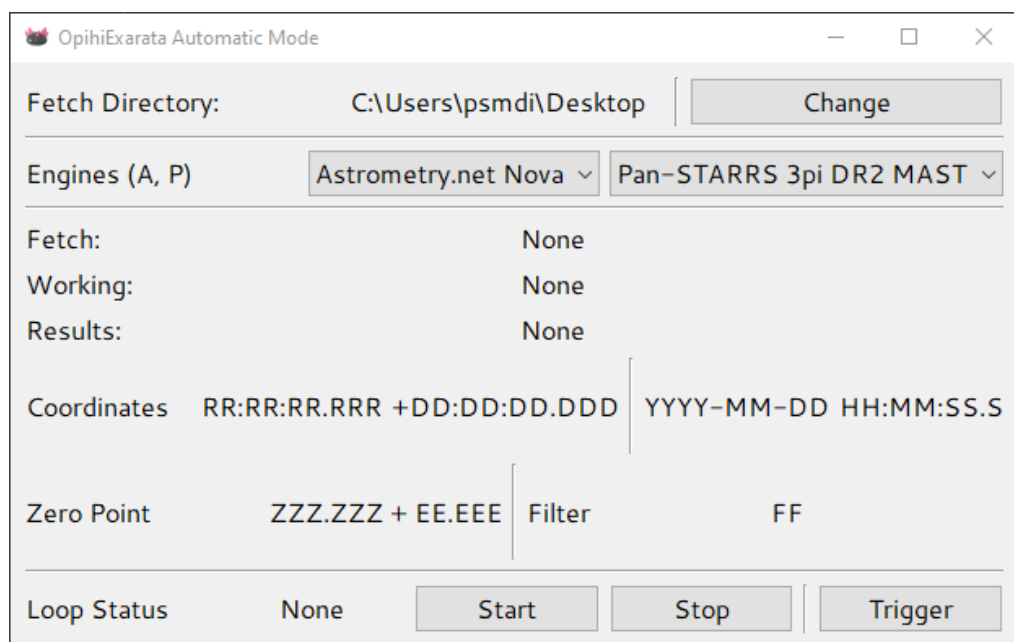


## Part 0: Opihi Camera Controls

1. Connect to Opihi's VNC (stefan:7) and log in using the engineering account.
2. If the Opihi XUI camera control and DV is not open, please consult the Opihi manual to start the software.

## Part 1: Start of the Night

3. Enable the Opihi dome offset on the TCS.
4. Under the **Macro** tab of the Opihi XUI camera controller, run the `auto_start` macro.
5. If not already running, start OpihiExarata in automatic mode.
  - I. There is an ssh shortcut on the desktop; open it and use it to log into the Opihi computer.
  - II. Go to the home directory of the user:
    - o `$> cd /home/opihi/`
  - III. Run the following command to start OpihiExarata in automatic mode:
    - o `$> exarata automatic`
  - IV. The window should look something like this:



- V. [Optional] In OpihiExarata, click the **Change** button to change the directory to where Opihi will save its images to (i.e. the engineering account and “tonight’s” directory).
- VI. [Optional] Set what software engines OpihiExarata will use to solve the images using the drop down menus. The defaults are likely good enough.
6. In the Opihi XUI, click **GO**. The camera will take images according to the specified intervals in the GUI.
  - I. [Optional] The expected camera temperature of Opihi is –50 C. You may want to wait until the camera cools down before hitting **GO**. It takes the CCD about 7 minutes to get to this temperature from ambient.
7. In the OpihiExarata window, click **Start**. The software will begin to solve images as taken by the camera.

## Part 2: During the Night

8. The image results (pointing and zero point solution) of the *Results* image file is displayed in the OpihiExarata GUI.
  - I. [Note] The software from now on should be autonomous. However, do check in from time to time in the event something failed. Please report it.
  - II. [Note] Though the [dome offset algorithm](#) is good for most cases, it is not perfect. If at any point in time, the dome is vignetting IRTF proper, disable the Opihi dome offset. This may happen at specific pointings.
9. A monitoring plot is generated over time as OpihiExarata solves images. You can view it on the Opihi website: [irtfweb.ifa.hawaii.edu/~opih/monitor/](http://irtfweb.ifa.hawaii.edu/~opih/monitor/)

## Part 3: End of the Night

10. On the OpihiExarata GUI, click **Stop**. Then you may close the software. Please wait until the xterm is ready before closing the xterm window.
11. Under the **Macro** tab of the Opihi XUI camera controller, run the `auto_finish` macro.
12. Verify that the cover on the front of the telescope is actually closed.
13. Log out of the Opihi XUI.