PHD2 Guiding

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All of the required software is currently installed on the `vattcontrol` server; login as vattobs.

The legacy *VATT Guider App*
only controls the stepper motors
in the guide box.*
Guiding is done with *PHD2* !

(*) When using VATT4k and GUFI, these motors move the two filter wheels for the science camera, the guider camera's filter wheel, the guider camera's 3-axis translation stage, and the stage carrying the center mirror and the U mirror.

- How to start PHD2 w/o telescope control, just for imaging:
  1. start indiserver and correct drivers
     - `$/home/vattobs/startindi`
  2. start phd2 guiding
     - `$phd2`
  3. configure phd2
     1. in the `Main tool bar`, click icon that looks like usb male connector
     2. `connect equipment` window should open up
     3. in `connect equipment` window, select camera type `INDI Camera`
     4. in `connect equipment` window, click on the icon that looks like a screwdriver and wrench in an “X”
     5. `INDI Configuration` window should open up
     6. in `INDI Configuration` window check following settings:
        - Hostname: localhost
        - port: 7624
        - driver: Apogee CCD
        - Dual CCD: Main
     7. click the `INDI` button near the bottom of the screen
     8. `INDI options` window should open up
     9. select the `Apogee CCD` tab
     10. check following settings:
     11. in the port section click the `network` button

12. in the network section:
    - subnet: 10.0.255.255
    - ip:port : 10.0.3.14:2571
13. click the `connect` button in the `Connection` field
14. a bunch of new fields and tabs should appear..
15. near the bottom, turn on the cooler
16. exit the `INDI options` window
17. click OK in the `INDI Configuration` window
18. click `Connect` in the `Connect Equipment` window, in the camera section
19. the button should now say `Disconnect`
20. click `Close` in the `Connect Equipment` window
21. In the `Main tool bar` (it may be positioned anywhere in the window),
    - click the `Advanced setup` (brain icon) button (second from the right); a new window should appear.
22. Set binning to the allowed maximum of 8×8:
    - Select the `Camera` tab,
    - in the group `Camera-specific properties`, set binning to 8 (pull down selector).
    - [Note. Ostensibly, binning can be set via `INDI options` as NxM where N and M may take any value you wish. This feature does not work. Binning can really be set only via the “brain” button.]
23. Disable mount guide output:
    - Select the `Guiding` tab,
    - in the group `Shared parameters` disable *mount guide output* (uncheck the box); `Guide output DISABLED` should appear in the lower left of the main window. This should prevent PHD2 accidentally interfering, e.g., with the PEPSI guider.
24. Set up automatic frame capture:
    - Select the `Global` tab,
    - check `Enable diagnostic image logging`, then
    - in the group `Save Guider Images` check `Until this count is reached`, and
    - set the value (100 is the maximum).
    - **The files are stored on the *vattdev* server!**
    - The Dark Library is located in the directory `/home/vattobs/.phd2/`.
    - The directory `/home/vattobs/PHD2/PHD2_CameraFrames…` is automatically created for the whole session.
    - If you need to capture more than 100 images, make a renamed copy of the session directory; new *fits* files should start populating the original session directory.

4. Start Imaging
    1. in the bottom left of the PHD2 window there is a button with 2 arrows forming a circle. Click that button.
    2. the button should gray out, the stop sign button should turn red, and images should start appearing