LIFE, THE UNIVERSE AND EVERYTHING:
THE HITCHHIKER'S GUIDE TO

MIT-IRTF REMOTE OBSERVING FACILITY

(Version 2.5)

LOCATION AND USE

The MIT-IRTF remote observing facility is on the MIT campus, Building 54, Room 427.
For directions see: http://whereis.mit.edu/map-jpg?mapterms=54%2BE34
The phone number is: **617-253-1946**.
Enter Building 54 on the east side, where there are elevators. Take elevator to 4th floor.
NOTE: Building may be locked after hours – arrangements can be made for access.

The MIT-IRTF remote observing facility is available to any experienced IRTF user. The facility currently uses a Sun Blade 100 computer with two 18-inch flat panel displays. The facility computer name is **SMASS.MIT.EDU**. A communication link to the IRTF summit control room is established using a Polycom ViewStation SP and 24-inch monitor.

New users of the MIT-IRTF remote facility should make requests for use well in advance of their scheduled time so that they may come for one or two scheduled observing sessions in advance of their own. This is the most efficient and effective way to learn to use the remote observing system. If possible, for your first night, someone will be present to be sure you have started successfully. Then you are on your own.

The MIT-IRTF remote observing facility will provide you, as necessary:
- -A temporary account and password for smass.mit.edu.
- -A temporary key to room 54-427.
- -Wireless internet access, for your laptop computer, as an MIT guest.
- -Information on building access.

The contact person for use of the facility is Professor Richard Binzel: rpb@mit.edu

IRTF GUEST ACCOUNT (Do this before your observing run)

You will need an IRTF guest account before observing.

ssh stefan.ifa.hawaii.edu –l addguest
password = <we can provide, or please contact the IRTF>

You will be prompted for your PI name and 3 digit IRTF proposal number.

You will be assigned an account, such as "guest01".
Pick a password you will remember.

ESTABLISHING THE MIT-IRTF POLYCOM LINK

Mechanical Notes:

There is no need to unlock the unit. Just rotate the wheeled cart into place.
The remote is located on the left side of the television.
When connected, point camera with arrow buttons and zoom as needed.

Operation Notes:

(1) Turn on TV (front right). Turn on Polycom box (back left).

(2) Check the LAN connection on back. It is "OK" when the orange light is blinking. If not blinking, find a working connection.

(3) Using the Polycom Remote Control, press arrow keys to select address book. (Middle button "•" is used to make selection.) Scroll to "IRTF Summit". Press the green "CALL" button.

In case you need it: The IRTF Polycom IP address is 128.171.165.81.
The IRTF Polycom phone number is: 808 974 4211.
The IRTF Summit phone number is: 808 974 4209.
You are at MIT. IP address 18.83.2.172; themis.mit.edu; (617)253-1946

(4) Place polycom microphone by computer. There is a "MUTE" button on the top (light turns red when MUTE is on). If there is static being received on the other end, try repositioning the microphone.

LOGGING IN TO SMASS.MIT.EDU

MIT NEO group: login username = "remote1".

Visitors to MIT facility: login username = "remote2".
A password will be provided to you.

We use the "Open Desktop Environment" on the Sun Workstation.

Step 0. Close unnecessary windows on MIT Sun workstation.

Close any windows that appear other than "terminal" or "xterm" windows.

If you need to open a console window, use the mouse:
[right click] --->programs---->command tool

Step 1. Allow the outside world to have access to the display windows.
Type this command into any open terminal window on the MIT workstation:

```
>/usr/openwin/bin/xhost +
```

Step 2. Set up xterm windows for launching IRTF interfaces.
There are two MIT Sun workstation windows, addressed as:

Left screen =	*Right screen =*
SMASS.MIT.EDU:0.0	*SMASS.MIT.EDU:0.1*

Open at least three xterm windows in the left screen and in the right screen:

(left terminal screen)	*(right terminal screen)*
>xterm &	>xterm &
>xterm &	>xterm &
>xterm &	>xterm &

If you need to open a console window, use the mouse:
[right click] --->programs---->command tool

Step 3. Verify readiness of IRTF computers with the Telescope Operator.
"Is it OK to login to IRTF computers 'stefan' 'bigdog' and 'guidedog' ?"

SECURITY UPDATE: guidedog and bigdog are no longer available via SSH. In order to use these computers remotely observers need to log into stefan.ifa.hawaii.edu in all windows. From stefan observers are then able to access guidedog and bigdog. The IRTF plans to make all users switch to the VNC viewer at some point in the future.

Step 4a. Login to IRTF (left)
(use three separate xterm windows)

```
>ssh stefan.ifa.hawaii.edu -l guestXX
```

```
>ssh stefan.ifa.hawaii.edu -l guestXX
>ssh bigdog.ifa.hawaii.edu -l guestXX
```

```
>ssh stefan.ifa.hawaii.edu -l guestXX
>ssh guidedog.ifa.hawaii.edu -l guestXX
```

Step 4b. Login to IRTF (right)
(use two separate xterm windows)

```
>ssh stefan.ifa.hawaii.edu -l guestXX
>ssh bigdog.ifa.hawaii.edu -l guestXX
```

```
>ssh stefan.ifa.hawaii.edu -l guestXX
>ssh guidedog.ifa.hawaii.edu -l guestXX
```

Step 5. Verify readiness of instrument computers with the TO.
"Is it OK to begin logging in to the instruments?"

Step 6a. Start operations (left)

(stefan window)
>setenv DISPLAY smass.mit.edu:0.0
>tcs1 status

(bigdog window)
>setenv DISPLAY smass.mit.edu:0.0
>bigdogxui

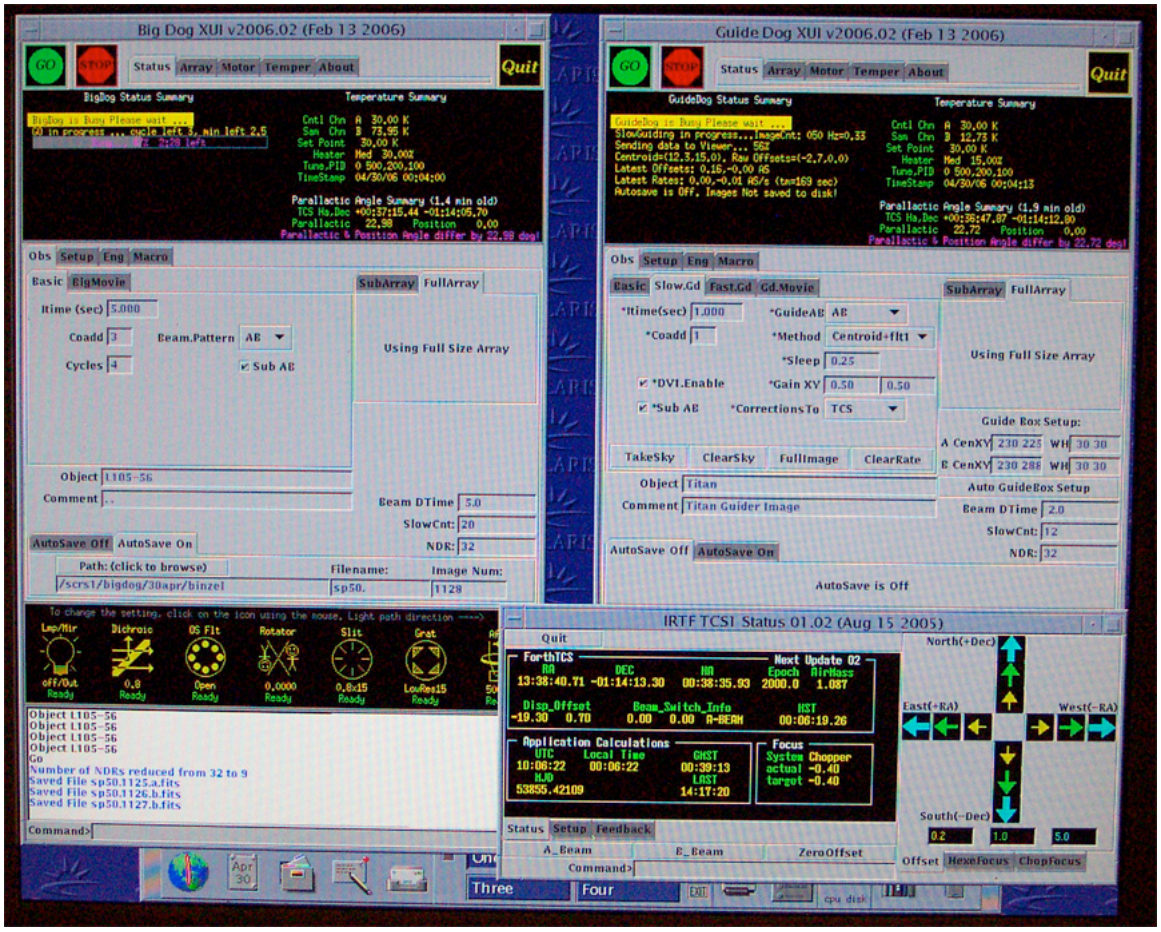
(guidedog window)
>setenv DISPLAY smass.mit.edu:0.0
>guidedogxui

Step 6b. Start operations (right)

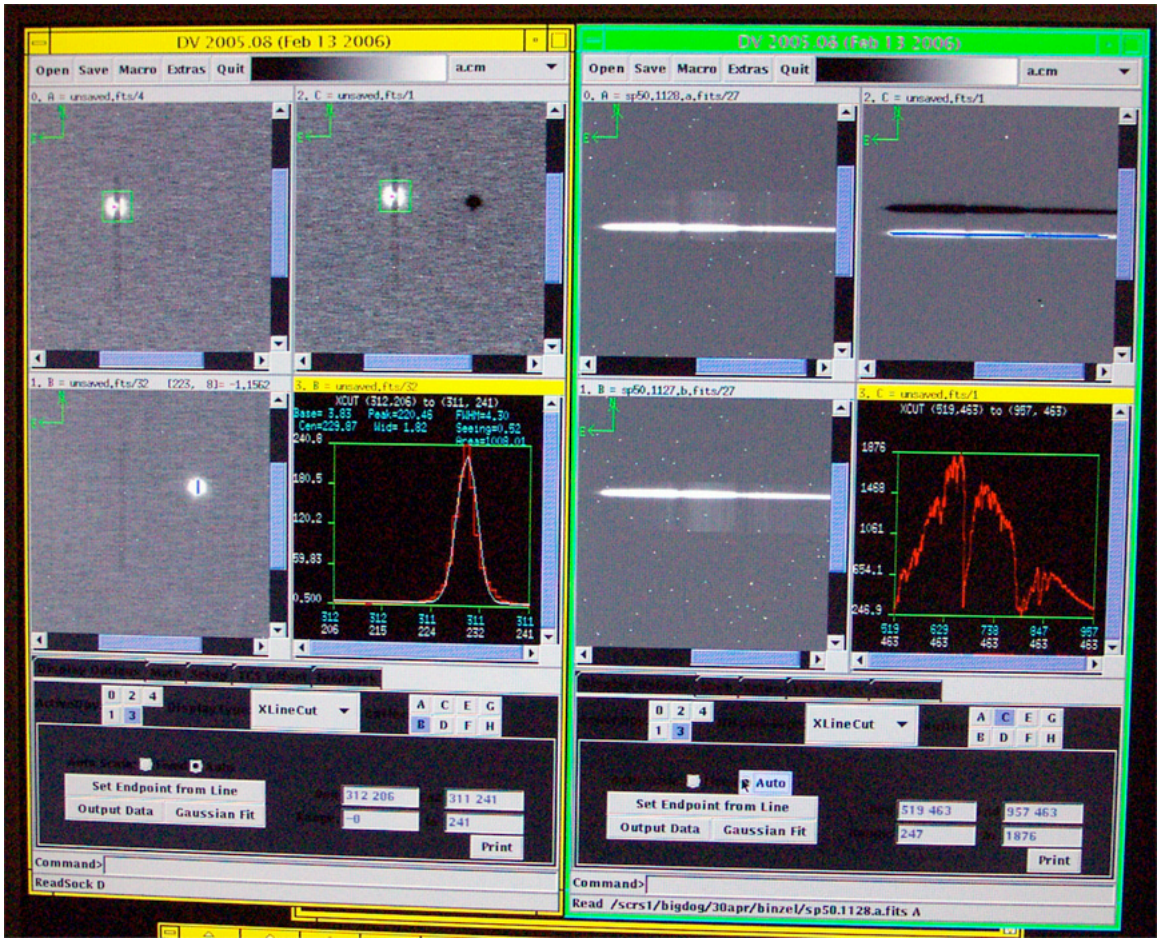
(guidedog window)
>setenv DISPLAY smass.mit.edu:0.1
>startdv

(bigdog window)
>setenv DISPLAY smass.mit.edu:0.1
>startdv

A convenient arrangement for the LEFT screen may look like this:



A convenient arrangement for the RIGHT screen may look like this:



Note about the color tables:
We find there is a "battle" over the control of the color table between our Sun desktop and the display of the IRTF Data Viewer (DV) windows. We find keeping the two DV windows abutted together, on the left side of the screen, minimizes the frequency of changes in the color table. With this arrangement, the mouse is less likely to traverse part of the Sun "Open Desktop Environment" when moving between the right and left flat panel display screens. The color table "battle" appears only to involve our right screen, which uses a separate video card from our left screen.

Step 7. In Big Dog XUI enter desired settings and other appropriate information. This includes but is not limited to: Entering observer name under the setup tag, turning autosave on.

For MIT observers: Rename the autosave path to
/scrs1/bigdog/UTdate/OBSERVER_NAME/spXX
Please write the path name in the log
File name is spXX. < this dot is important. Files should start at 1001, 2001, etc. depending on night of sp run.

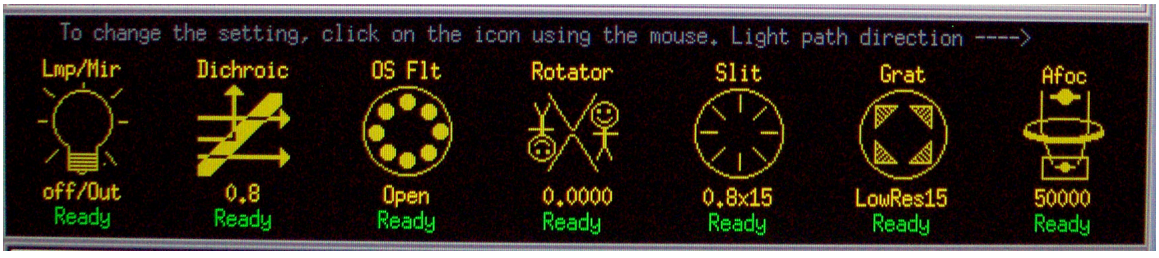
Check the command window for confirmation on each setting change. To be certain, press enter after each entry.

Addendum to 7: if you require beam pattern switching, select Beam Pattern=AB. Check the "sub AB" box and select "Auto Guide Box Setup."

Step 8. Select Big Dog Instrument Settings.

For MIT NEO group are: LMP/MIR: take mirror out, all entries should be off/out. Dichroic= OPEN (or #3=0.8, if specified); OS (order sorting) filter=open; Rotator=0.0; Slit=0.8 x 15 arcsec; Grat=#5 LowRes15 0.8-2.5µm. Afoc (spectrometer autofocus) is automatic depending on the grating.

The Big Dog instrument settings console (on the Big Dog XUI). Example shows MIT NEO group settings.



Step 9. Select Guide Dog Instrument Settings.

Choose Guide Dog filter. MIT group: use GD GFlt=J. Focusing at dusk can be started in K. The auto focusing software uses the K filter, make sure the system switches back to J, as it is easier to view asteroids in the J filter.

Have you hit "Auto Guide Box Setup" today?

Step 10. Focusing, A Suggested Approach.

(a) Go to overhead star. Move object away from spectrographic slit. In GuideDog basic mode, take exposure.
(b) Take a horizontal cross section (shift button + middle mouse key). Select "X Line Cut" in the GD DV buffer and "set endpoint from line."
(c) In the Stefan TCS control window: Click Chop Focus tag and enable Chop focus. To adjust focus click +/- or set manually.
(d) Take repeated images and adjust focus in between OR using Basic Mode with ~100 cycles adjust the focus and watch it change. **As temperature drops, focus tends to become more negative. Especially at the beginning of the night with the high cooling rate. If in doubt, set a little more minus.
(e) When focused, use the "X Line Cut" and "Gaussian fit" to get a seeing estimate in arcseconds. For an OFFICIAL seeing estimate 10 seconds of data is needed. Possible parameters for this are: ITime=1s, CoAdd=10, Cycles=1

Step 11. Data Time!

Step 12. Shutdown. Use the "shutdown" macro in bigdog. Or just put mirror=in, OS Flt=Blank. Quit out of all 5 IRTF windows and logout of Stefan, Big Dog and Guide Dog.

Helpful Information and Hints

(1) Tell the Telescope Operator to set the "zero point" (or "cross-hairs") with the object out of the slit. Choose a known distance (5-10 arcseconds) so that you can take sky and clear sky prior to moving the object to the slit.
(2) Make sure to turn off the auto guiding before informing the T.O. to move the telescope.
(3) After solar analog stars, run the macro to ensure enough flats and arcs for the data reduction. For MIT group the macro is: cal_prism_0.8 (this 0.8 is the slit size). Hit Execute, not go.
(4) If you stop a bigdog integration before it has finished run macro "array_init"