Observing with the Near-IR Camera

June 30, 2003

This is a short guide for observers who wish to use the Near-IR Camera.

1 Setting the Telescope Controls

1. Set the observation port for the Near-IR Camera (will be done by Hanle staff).
2. Set the focus, tip and tilt values to zero using the Telescope Control GUI. This is the best determined setting as of now.
3. Similarly, select the Instrument Rotation to be in "position" mode.

2 Starting IR-IMAC

1. Switch on the IR array controller and the motor controller (done by Hanle staff).
2. Start the vncviewer. (Say `vncviewer &` from the command line.)

   Server name :- 192.168.100.27 agfa:1

   Password : ananth

   Note that the vncserver has to be started on AGFA first. This is done by Hanle staff.
3. Open another xterm window in AGFA (this is the name of the control computer) if required.
4. Go to the proper directory.
   `cd saods9/ir-imac`
5. Give the command `ir-imac &` to start IR-IMAC.

3 Starting the observations

1. At present, pointing model for this particular focus / tip / tilt setting has not been done. So, one has to observe a sufficiently bright star (chosen from `STARCAL` in the Telescope Control GUI, for example) to determine the RA / DEC offsets.
2. Select the 'Across / Along Track' option in the *Controller* menu from the Telescope Control panel so that offsets in RA / DEC can be determined.
3. Now you may start the observing programme.

4 Tips and FAQs

1. Before you begin observations please refresh your knowledge of IR observing techniques and decide on the observing strategy for the night. It is worthwhile to familiarise yourself with IR-IMAC also.

2. It is useful to have a look at the current weather data (either on the Weather Server or IR-IMAC) to get an idea of the quality of the night. A relative humidity level of less than $\sim$ 25% and low wind speed signifies a photometrically good night.

3. As seen on the IR-IMAC screen, South is on top and East is to the right.

4. Stars brighter than $K \sim 7$ tend to get saturated even with the shortest exposure time. A $K \sim 10$ star can be seen on the screen with 5 to 10 s of integration. Anything fainter can only be detected by image processing techniques.

5. *What should be the integration time ?* If you are observing stars between 8-11 magnitude, a 5-10 s exposure time is ok. You need to take several such exposures to improve the S/N. This is also essential to get a good 'sky'. **Regular updates on this will be prepared in the form of graphs and/or tables.**

6. *What is the limiting magnitude of the instrument ?* Frankly, we do not know yet. Our estimates for the sky are $J = 15$, $H = 14$ and $K = 13$.

7. *How do I take flats ?* The sky gives a sufficient signal to allow construction of a sky flat from your data frames. So, there is no need to obtain a flat separately. Some observers may wish to obtain sky flats by observing a 'starless' portion of the sky. However, be warned that the sky may not be really 'starless' in the infrared. In any case, you can always edit out any unwanted stars during data reduction.

8. *How stable is the dark ?* The dark counts have been very consistent so far. So you do not need to take frequent darks. Just once a night, preferably after the observations is enough.

9. **Please remember to keep sufficient time for copying your data.**

10. Please have a quick look at the data after you return to your Institute / office to ensure that it has been properly copied. **Although a backup will be kept, old data will be deleted from AGFA after a certain time period.**

5 Caution

1. **Be patient.** Sometimes the link can be slow. Do not go on clicking all over the workspace.

2. At present only the f/9 camera mode is active. This gives the best image quality and is the default mode.

3. Presently the Fowler sampling mode works only in the n = 2 mode (i.e reset - 2 reads - integrate - 2 reads mode). This gives a $\sqrt{2}$ improvement in the S/N over the DCS mode. This mode has not been tested as extensively as the SF and DCS modes.