

Ay105– Tips for Simple Image Processing in IRAF

It is very straightforward to use *IRAF* (Image Reduction and Analysis Facility) to examine fits files and perform image arithmetic. IRAF can be started on the ay105 unix account by entering the "command language". First, start a window called "xgterm" on the X emulator screen on the PC (or from any network workstation). You will also want to start the image display window, called "ds9". Specifically, in any xterm window, % mkiraf [to initiate an iraf subdirectory and create a file login.cl, if these don't exist already] % xgterm & [to open an xgterm window, the only terminal type IRAF graphics plays well with]

Now in the xgterm window,

```
% cd iraf
```

```
% cl [this will start the command language]
```

The IRAF prompt will be "cl>".

To display an image, use the command "display". For example,

```
cl> display temp1 1
```

will display the image temp1 on frame buffer 1 of the image display window. It will automatically choose the "stretch", but this can be overridden if you so desire.

To perform image arithmetic on any two image (or on a single image),

```
cl> imarith <filename> <operator> <value or second file name> <output>
```

where the operator is +, -, /, *. For example, to subtract temp2 from temp2, and save the result in temp3,

```
cl> imarith temp2 - temp1 temp3
```

To subtract a constant value of 347.0 from every pixel in temp3,

```
cl> imarith temp3 - 347.0 temp3
```

Also useful is an image statistics task cl> imstat temp3

which, like imarith, can also be used in a sub-image mode such as cl> imstat temp3[50:100,50:100] to perform image statistics on the 50 x 50 pixel region specified.

You can interactively examine an image using the command "imexam". Of particular interest might be plotting of rows or columns of the image ("l" or "c" while the blinking cursor is in the image window) or obtaining statistics in a box that is centered on the cursor position ("m"). There are lots of other options, which are described if you hit "?" while the cursor is in the image window. You can create postscript files (or one of several other image formats) of the image window by pulling down the menu option on the ximtool, and you can save ps files of the graphics window by executing the following while the cursor is in the graphics window:

```
:.snap uepsf
```

This will produce a file called "sgi.eps" where "" is some random numeric string. This can then be printed on your favorite postscript printer.

More help with IRAF is available online or from Ay graduate students.