STEP 6 - MAKING THE FINAL IMAGE

Now, we have the reduced on-images and their shifts all neatly stated in the shifts.list. We also have a map of unreliable (bad) pixels on the detector in the badpixels.pl list.

We can then use a command called xnregistar to make a final mosaic.

```
epar xnregistar     inlist = shifts.list
                    rmasks =
                    output = final_Ks
                    expmap = exposure_Ks
                    fractio = yes
```

The above settings will produce a mosaic WITHOUT considering bad pixels (this shows why we need a bad pixel map). After running xnregistar with these settings, we get a mosaic called 'final_Ks' and an exposure map called 'exposure_Ks'. Displaying the exposure map is a good idea, to see how many on images where used in different parts of the mosaic.

When displaying the 'final_Ks' image we see that bad pixels should be taken seriously, and we need yet another list!

```
bad.list            badpixels.pl
                    badpixels.pl
                    badpixels.pl
                    . . .
                    badpixels.pl
```

There should be as many entries in the above list as on-frames (16 in the example). This list will tell xnregistar what bad pixel map to use for each on-frame (the same bad pixel map is often used for all on-frames).

Now we need to delete final_Ks and exposure_Ks (if they exist) since IRAF cannot overwrite these. Then we can proceed:

```
epar xnregistar     inlist = shifts.list
                    rmasks = @bad.list
                    output = final_Ks
                    expmap = exposure_Ks
                    fractio = yes
```

Now we're done!

The resulting mosaic and exposure map can easily be compared with:

```
disp final_Ks 1
disp exposure_Ks 2
```

As stated before, some bad pixels (or more exactly, regions) have not been marked as bad in the badpixel map. This should of course be done more carefully for serious observations (by manually setting regions in badpixels.pl to bad).

However, for this exercise the results are just fine!