

## Astro software setup on the PHY/309 Macs (2009-10)

Specific software and data files are needed for the PHY2017 astro lab. This document describes how to set these up on the PHY/309 Mac cluster.

**IMPORTANT:** use one of the shiny metallic macs (MacOSX 10.5 Leopard) , not the white plastic ones (10.4 Tiger).

### FITS files

FITS (Flexible Image Transport System) is the astronomical image format used to write out the CCD data. In addition to pixel values, it includes header information such as provenance and axes scales.

To connect to the file server, open Finder and select Connect to Server (**⌘+K**), then type 'cytosine1/Users ' followed by your password when prompted.

The data from 2008 is on server cytosine1 in  
Module Folders/PHY2017/Astrophysics/Imaging.  
At some point in connecting you'll have to reauthenticate with your password.  
If you took your own data at the telescope, you will find it in  
/Module Folders/PHY2017/Astrophysics/Observations/<date>

Drag and drop the 'Imaging' or Observations/<date> directory into your own folder to copy the files. Alternatively, use the Unix command line to make a directory and copy the files over

```
> mkdir astrolab  
> cp /Volumes/Users/Module\ Folders/PHY2017/Astrophysics/Imaging/*.fits astrolab
```

### IRAF

IRAF is a software package for data reduction and analysis which runs at a command-line interface.

To start IRAF, open a terminal window.

If you haven't already, you might want to add Terminal to your dock. Open finder at Applications/Utilities/Terminal and drag and drop the application onto the dock bar.

Change directory to the directory with your data using the unix 'cd' command, eg.

```
> cd projects/astrolab
```

At the terminal prompt

```
> source /Applications/scisoft/all/bin/Setup.csh
```

When starting IRAF for the FIRST TIME ONLY, create an IRAF parameter file login.cl. At the terminal prompt type

```
> mkiraf
```

When prompted for terminal, type "Terminal"

To start IRAF, make sure you are in the directory with the login.cl file and type

```
> cl
```

You can subsequently change directory using cd within IRAF .

To exit IRAF, from the cl prompt

```
ecl> logout
```

To restart IRAF, make sure you are in the directory with the `login.cl` file and type

```
> cl
```

## SAOImage DS9

SAOImage DS9 is an application used for visualizing and interacting with astronomical images. It is available as a native mac application, so there are several ways to start DS9.

From the command line, type

```
>open /scisoft/i386/Applications/SAOImage\ DS9.app
```

**or** double-click on the application in Finder (again, you might like to put it in your dock)

**or** from the command line, 'open `xx.fits n`' where `xx.fits` is the FITS image to display

Once DS9 is running, from IRAF, 'display `xx.fits n`' where `xx.fits` is your FITS image and `n` is the frame number (default 1).

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