CCD Imaging Lab Setup

The CCD Imaging Lab hardware consists of four components:

1. On one end is the *CCD computer*, hooked up to the CCD Camera and Filter Wheel. You'll use CCDSoft on this computer to take your images. You may need to adjust the CCD Camera position slightly to bring your images into best focus.
2. On the other end is the *image computer*. This is your proxy for the night sky.
3. In between is the *lens system*. This is your proxy for the telescope. Fun fact: the lens was formerly employed in U2 spy planes, it's radioactive!
4. A *dark box* encasing the entire system to block incoming ambient light sources like room lights etc.

In this lab you will use the image computer to display images the lens system will then image onto the CCD Camera which is controlled by the CCD computer.

The image computer is set up to display either an image of M51: the Whirlpool Galaxy, or a white background used to take flat field calibration images. Very bright LCD displays will result in too short a CCD integration time (or saturated image). Too faint LCD displays result in loss of display dynamic range (number of bits/pixel in display). Experiment with brightness levels on the image computer to get usable integration times on the CCD while maximizing dynamic range of the image. This will allow the maximal amount of gray scaling, producing a better CCD image.

You will need to focus the lens, moving it to form an image of the image computer screen on the CCD.

Make sure you understand how different calibration images are used and which you will need to take to reduce your images (Bias frames, Dark Frames, Flat Field Images).