Lab 2 : Observing with an Aligned Telescope and CDD Camera

**Purpose:**

The purpose of this lab was to use a CCD in conjunction with the telescope, after having balanced it and aligned it.

**Successes:**

In this lab, we successfully set up the telescope and CCD. We were able to balance it with relative ease. Following the manuals instructions, we were able to focus the CCD and capture some good images of several objects. We captured images of M57 in each R, G, and B bands. At some point we got so excited taking pictures, we ended up taking several of different objects and it turned into 3 a.m.

**Pitfalls:**

In the beginning of this lab, we were doing some fine adjustments to the mount and apparently the bolts were still loose, or were loosened too much, and the telescope visibly and audibly jerked downward. An extended period of time was spent trying to right this wrong which was eventually accomplished. We also grabbed the wrong CCD at first but we swapped it for the correct one very quickly realizing the mistake.

**Picture:**

This is a hot supernova remnant, which has a star in the middle of it, so the gas absorbs the photons from the star and reemits them at different wavelengths depending on composition.

The different color contributions for the RGB image of Vega come from the composition of the supernova remnant. The outside is mostly Hydrogen which emits at 656.3nm which is detected by the Red filter. The next layer in is Nitrogen, emitting at 654.8nm and 658.3nm, which is detected by the Green filter. The innermost layer is Oxygen which emits at 497.5nm and 500.7nm. This is detected by the Blue filter. Combining these images creates a full color picture of the object observed.