

Check your photometric calibration

If you are done with part 5 and want to do a few extra steps, try the following. We used the Pan-STARRS survey, which has *g* and *r* photometry of our stars, to infer what the B and V-band magnitudes are. We did this using transformations in a paper from Pan-STARRS that is described in the part 5 notebook. This in turn let us find out what our magnitude zero point was, i.e. the magnitude corresponding to a single count. The transformations we used were in Tonry et al. (2012; <https://ui.adsabs.harvard.edu/abs/2012ApJ...750...99T/abstract>) using equation 6 and table 6.

Once you got the magnitude zeropoint in the `zp_meas()` routine, you applied that to the counts from your image to get the B and V-band magnitudes.

However, we also have B and V-band magnitudes for stars in our cluster measured independently and documented in Webda. I would like to use these to find out whether they agree with the B and V-band magnitudes that you infer.

The most straightforward way to do this is as follows:

1. find a relatively isolated, bright, and unsaturated star in your image version that contains the correct WCS. Write down the pixel coordinates and RA-DEC.
2. Now find that star in your "srcs" list for that band. You can do that by finding a star whose pixel coordinates are very close (within 1-2 pixels) of yours. Or you can find a star that is close in RA and DEC (these are computed in the `make_CMD()` routine). You can do this either by searching the list by hand or writing a code to loop through all sources and find the one that is closest to your coordinates. Keep track of the RA and DEC of that source
3. Use the flux of that star, coupled with zeropoint, the airmass term, and the extinction coefficient for that filter to compute the B or V-band magnitude. Make sure you use the appropriate zero point for the filter you are using.
4. With the RA and DEC of your star, find the corresponding star in the Web *coordinates J2000* list and note the star number. Now go to the *UBVCCD photometry* list and find the magnitude of that star.
5. Compare the Webda magnitude and your magnitude.
6. Do this for a couple of stars and determine how accurate our magnitude determinations are compared those from Webda.