

AY257 Fall 2015

Homework #4: Surface Photometry

There are three CCD FITS files at:

http://www.ucolick.org/~bolte/AY257/HMWK4_2015

n3379_sh.fits and n3379_long.fits are short and long R-band exposures respectively of the elliptical galaxy NGC 3379. h22_comb.fits is a deep B-band exposure of the Hickson Compact Group #22.

1. Combine the short and long exposure frames of NGC3379 into a single, higher-dynamic range image of the galaxy. Describe your process for doing this merging of images. Useful tasks: *imstat*, *imreplace*, *imarith*, *imcomb*
2. Fit elliptical isophotes to NGC3379 using *stsdas.analysis.isophotes.ellipse*. Is there a significant B4 term?
3. Build a model using *bmodel* in the same package and subtract it from the original image.
4. Using *isoplot*, plot out the radial profile of NGC3379. Compare your profile to one from the literature. Is NGC3379 an exponential-profile galaxy or an $r^{1/4}$ -law galaxy?
5. Fit ellipses to the three largest galaxies in the H22 field, build models based on these fits and subtract the fits from the original frame. Compare the radial profiles of the three galaxies.