

1 Problem 3 Spring 2006

In the directory <http://www.ucolick.org/~bolte/AY257/PROBLEM3> are three fits files. These have already been flat-fielded. n3379_sh is a short exposure of the giant elliptical NGC 3379 through and *R* filter taken with LRIS + Keck. n3379_long is a long exposure of the same galaxy taken with the same telescope/instrument and filter. h22_comb is the average of several *B*-band images taken with LRIS of the Hickson compact group #22.

1. The central pixels in n3379_long are saturated. Construct a new image of NGC 3379 by combining n3379_long and n3379_sh, properly scaled and eliminating the saturated pixels.
2. Fit elliptical isophotes to N3379 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. Iterate if necessary to improve rejection of high values (stars and galaxies) within the NGC 3379 profile. It can sometimes be useful to use `imedit` to pre-clean objects from the frames. Display your best effort with a lookup table that displays values between $\pm 5\%$ of the mean central value after subtracting your best fit.
Describe any interesting features left behind after the subtraction.
4. Using `isoplot`, plot out the radial profile N3379. Compare your profile to one from the literature and derive a rough calibration. Is N3379 an $r^{1/4}$ -law or an exponential-profile galaxy?
5. Fit ellipses to the three largest galaxies in the H22 field, build models based on the fits and subtract them from the original frame. Can you think of anything interesting to do with these model-subtracted frames? Compare the radial profiles of the three galaxies.