PHOTOMETRY AND GAIA/PHOTOMETRY

GAIA - Graphical Astronomy and Image Analysis Tool Based on Skycat at ESO *Starlink Cookbook 17.1 A.C. Davenhall & P.W. Draper   Copyright © 2001 Council for the Central Laboratory of the Research Councils*

PHOTOMETRY

From Astrophysics course you already know   basics about Fluxes, Magnitudes, Photometric Systems, Atmospheric extinction Chap.5-6-7-8. Look at profilostellare.jpg to understand why, for a fixed seeing FWHM, more luminous stars appear larger...

http://star-www.rl.ac.uk/docs/sc6.htx/sc6.html   or StarlinkCAP9.pdf StarlinkCAP10.pdf StarlinkCAP11.pdf

Now, READ Chapters 9-10-11, In particular: the selection of the standard stars, instrumental magnitudes, aperture and PSF photometry, eq.14, calibration and eq.15, look also at the figures in calibrationDES.jpg

READ part of a500_lecture13_s13.pdf and SDSSobservables.pdf to understand the meaning of isophotal and "total" magnitudes for extended objects (e.g., galaxies!). More details in the SExtractor Book mud165.pdf (cap 9.4).

GAIA

*Gaia point 14 Measuring Instrumental Magnitudes USE +frame.sdf or other fits, measures a few object and look at the values...

You can also try optimal photometry (with PSF)...

*Surface photometry, look at the help on the window +USE ngc1275.fits, add the obj, ell fit, change col to the isophotes,estimate the background, fit...try M51, too...the fit follows the spiral arms.

*Gaia point 13 Automatic Object Detection, you can fix the zero point e.g. 30, you can change the parameter in output with catalogue (e.g., to obtain x y world, flux-iso and its error, mag iso, mag auto, ellipticity, clas-star). File save "catalog". You can select objects in the catalog or in the image to cfr them. In particular, look at:

- mag auto<iso i.e flux is larger for auto-method, ;

- look to one isolated star: the error on flux is larger than sqrt(flux)...there is no ony the Poissonian compunent...e.g. There is the error on background...;

- select 2-3 isolated stars well different in luminosity: the Relative error in flux is larger for fainter obj...since the background error relative to that of star is larger!

- Look at the objs which are likely star or galaxies by eye...what about the respective values of class_star? Stars have class value high (0.8, 0.9), galaxies very low (0.)...NEXT LECTURE!

IN CLASS/LONG-TIME HOMEWORK: make aperture photometry of your variable star (retalive to a non variable star). HOMEWORK: establish delta mag of SN you observed.