**Galfit homework**

1. check the image comments on the image/appearance/values

(use DS9: https://sites.google.com/cfa.harvard.edu/saoimageds9/download)

1. run galfit (e.g. single sersic, double sersic, sersic + exponential disk) and check the results
2. comment
3. Obtain the total luminosity of the galaxy in solar units in the K-band (this is the filter used for the data you are using).

Assume a redshift z=0.3 and the total mag obtained from the single sersic model

Conversion from redshift to distance and apparent/absolute mag

Sun’s magnitudes: see <https://mips.as.arizona.edu/~cnaw/sun_2006.html>

Check the cosmological calculator   
  
<https://www.astro.ucla.edu/~wright/CosmoCalc.html> for distance

to obtain the luminosity distance (see also the angular distance) corresponding to the redshift z=0.3.

Then apply the K-correction that one can derive from this website

http://kcor.sai.msu.ru/

assuming J-K=0.5

Use the equation

m=M+5 log dL/10pc + K (see lecture 9)

and being Mag\_sun, K= 3.28 (see website above)

check that this equation below provides the total luminosity of the galaxy obtained by galfit (mag\_tot) in the K-band

Lum = 10^(-0.4 (magtot - Mag\_sun - (m-M)))

**Note for dynamics**

Using the dA distance from the cosmological calculator you can use the following equations to convert the gravitational constant from cm^3/s^-2g^-1 in arcsec (km/s)^2 Msun^-1 that is useful for dynamics later on in the course

Dis = dA;

pc = (180\*3600)/(Dis\*10^6\*Pi); %conversion from arcsec to pc it gives the pc/arcsec conversion

cm = 1/(3.085678\*10^18)\*pc; %conversion from pc to cm

gr = 1/(1.9892\*10^33); %conversion from grams to solar masses

km = 10^(-5); %conversion from cm to km

G0 = 6.6724\*10^(-8)\*cm^1\*km^2\*gr^(-1) %gravitational constant in arcsec (km/s)^2 Msun^-1