ASTR 400B In Class Lab 4

Feb 8th 2018

1. Update your clone of the Class GitHub Repo (git pull)
2. Under InClassLabs/InClassLab4/ you should find a template Jupyter notebook and .py file
3. There will also be a file called "BulgeMass.dat" that contains the mass profile of the bulge. First column is mass in units of Msun, 2nd is radius.
4. The template reads in the mass profile, and plots the luminosity density profile of the Bulge using a given mass to light ratio
5. The template also defines a function HalfMassRadius, which returns R_e
6. Modify the template file of your choice to create a function called *Sersic* that returns the function :

$$I(r) = I_e exp(-7.67[(r/Re)^{1/n} - 1)]) \qquad L = 7.2\pi I_e R_e^2 \tag{1}$$

   It takes as input: R_e, Radius, sersic index n, the M/L ratio, and the total mass of the bulge.
7. Overplot a sersic fit to the bulge density profile. What index is preferred?
8. NOTE: really we should be using the projected density profile of the bulge along some line of sight. The 3D density is a good enough proxy for now.