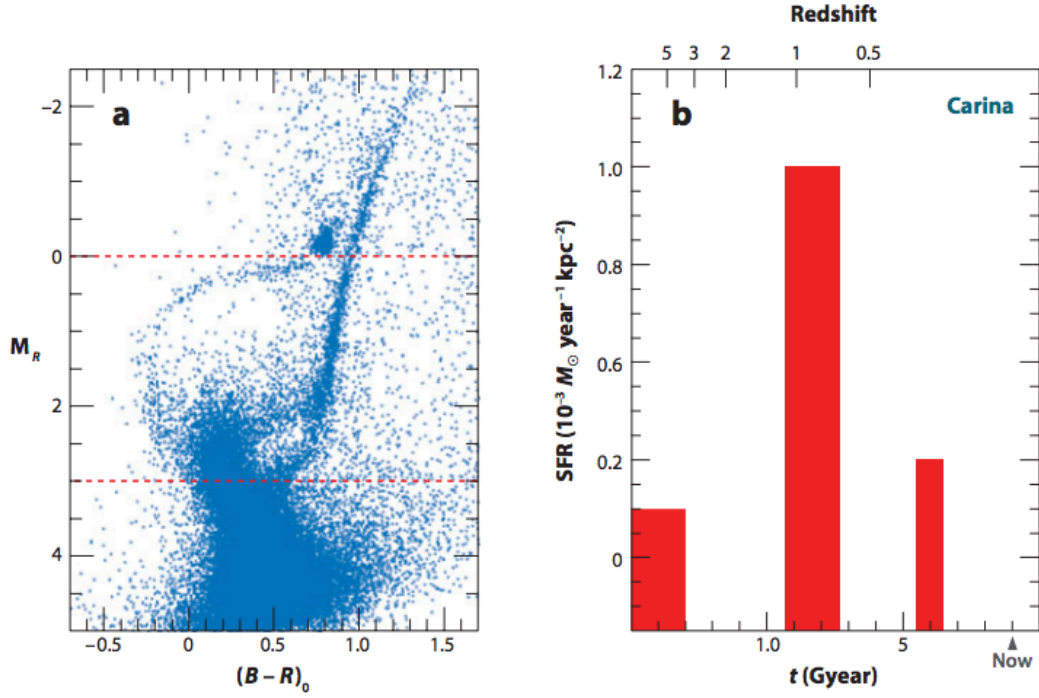


# ASTR 400B In Class Lab 3

Feb 6th 2018

Figure 1 illustrates the color magnitude diagram (CMD) for the Carina Dwarf along with the interpreted star formation history from isochrone fitting to the CMD.

1. Update your clone of the Class GitHub Repo (git pull)
2. Under InClassLabs/InClassLab3/ you should find a template Jupyter notebook and .py file along with a series of .txt files.
  - The text files are isochrones for a single age population, the age is indicated by the number in the file name.
  - The Isochrones come from [http://stellar.dartmouth.edu/models/isolf\\_new.html](http://stellar.dartmouth.edu/models/isolf_new.html) They assume  $[\text{Fe}/\text{H}] = -2.0$ ,  $\alpha/\text{Fe} = -0.2$ .
  - The template code sets up an example of reading in one of the isochrone files and plotting it.
3. Modify the template file of your choice to plot isochrones that correspond to the inferred star formation episodes (right panel of Figure 1) to recreate the CMD of Carina (left panel of Figure 1).



**Figure 4**

(a) A color-magnitude diagram of the Carina dwarf spheroidal (obtained by M. Mateo with the CTIO 4-m and MOSAIC camera, private communication) in the central 30' of the galaxy. This clearly shows the presence of at least three distinct MSTOs. (b) The star-formation history of the central region of Carina determined by Hurley-Keller, Mateo & Nemec (1998), showing the relative strength of the different bursts. The ages are also shown in terms of redshift.

Figure 1: From Tolstoy+2009 review paper about dwarf galaxies