AST 337
Exercise #1: IDL Basics
Due 3 February 2009

Every astrophysicist needs basic tools to extract useful information from data and display it. This exercise will introduce you to reading data from a table and making plots, using IDL.

I. Reading tabular data and plotting to an IDL Direct Graphic window.

1. Start IDL on a classroom iMac.
2. Locate the files *isochrone_1Myr.cat* and *isochrone_5Myr.cat* and open them in your favorite text editor. (Hint: Look in the directory ~/ast337idl/examples .)
3. Open a new file in your text editor that will contain your IDL batch file for this exercise.
4. In your batch file, enter commands to:
    1. Read all of the columns of *isochrone_1Myr.cat* into IDL arrays using *readcol*.
    2. Plot Mass versus Effective Temperature using square plot symbols. Include axis labels and include your first and last name in the title of the plot.
    3. Read all of the columns of *isochrone_5Myr.cat* into IDL arrays using *readcol*.
    4. Overplot Mass versus Effective Temperature using asterisk symbols on the original plot.
5. Complete and save your batch file in the directory ~/idlpro .
6. Run and debug your batch file until you are satisfied, then show the plot to James or Rob.

II. Plotting several plots to a Postscript file.

1. Edit your batch file from Part I to plot the following plots to a single Postscript file (.ps file suffix):
    1. Mass versus Effective Temperature for both 1 Myr and 5 Myr isochrones as in Part A.
    2. Mass versus Bolometric Luminosity for both 1 Myr and 5 Myr isochrones, using title, labels, and the plot symbols for each isochrone as described in Part A. (Hint: M_bol is the bolometric *magnitude* and the Sun's M_bol is 4.64 .) Label the Hydrogen Burning Mass Limit (M = 0.08 M_sun) for both isochrones. (Hint: Look up *xyouts* in the IDL Hypertext Help.)
2. Run the batch file and view your Postscript file using Preview (found in the Applications folder).
3. Submit your batch file and your Postscript file.