

“HR Diagram of M80” Laboratory Exercise

Part 1, Pictures

Purpose: HR Diagrams are central to understanding stellar evolution. Here, we'll take real Hubble Space Telescope data, and make an HR diagram out of it.

Method: Download the data to your computer. Import it into Excel, and make a color-magnitude diagram, which is the same as an HR Diagram. You'll need to put your answers in a separate Word or PDF document and submit via Blackboard.

Go to <http://hla.stsci.edu/> Click “Enter Site.” Search for M80. Then do an “Advanced Search”. Check off only the WFPC2 instrument. Search for Proposal ID 11233. Two “visits” come up, and eight results appear. Six of these results are not relevant to this lab. You only want to use “visit 6” for this lab. Locate the F450W and F814W data. Ignore the “F814W/F450W” and “detection” spectral elements. Click on “Display” for the “Visit 6” F450W data.

- 1) When the image comes up in a new window, zoom in and out, pan around and describe what you see. (hint: none of these answers are one or two words....)
- 2) Now click on the Advanced Contrast Controls. Play with light/dark and describe what you see as you make the changes between light and dark.
- 3) In the Image Viewer, check the box for DAOPHOT. All the circled stars are data. How many stars are circled when you check DAOPHOT on the F450W data?
- 4) Why, perhaps, were some stars not be circled and kept as data?
- 5) Now look do the same with the display image for the F814W data. How many stars are in the DAOPHOT dataset for the F814W image?
- 6) Between the two images, which one seems to show the stars being brighter using the default settings in the image viewer?
- 7) Compare and contrast your two images to this image of M80:
http://hubblesite.org/newscenter/archive/releases/1999/26/image/a/format/web_print/
- 8) Roughly where in M80 are you looking with the Hubble Data?
- 9) With that in mind, why did the team doing the observations of Visit 6 look where they did?

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