

# “HR Diagram of M80” Laboratory Exercise

## Part 2: Astronomical Filters

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.

Now we want to understand the filters that were used in Part 1. Look at this web page:  
<http://svo2.cab.inta-csic.es/theory/fps/index.php?mode=browse&gname=HST&gname2=WFPC2>  
Look at the filter plots. The X-axis is wavelength in Angstroms, and the Y-axis is transmission percentage. The top of the Y-Axis is “1”, which is 100% transmission. The bottom is “0” which is 0% transmission.

- 1) What is the range of transmission wavelengths of the F450W filter on the WFPC2?
- 2) What is the range of transmission wavelengths of the F814W filter on the WFPC2?
- 3) Given that visible light ranges between 4000 and 7000 Angstroms, what kind of light does the F450W filter appear to allow to pass? Indicate all that apply.

Radio	Microwave	Infrared
Red Visible	Green Visible	Blue Visible
Ultraviolet	X-ray	Gamma Ray

- 4) Given that visible light ranges between 4000 and 7000 Angstroms, what kind of light does the F814W filter appear to allow to pass? Indicate all that apply.

Radio	Microwave	Infrared
Red Visible	Green Visible	Blue Visible
Ultraviolet	X-ray	Gamma Ray

- 5) Is the F450W a “red”, “green” or “blue” filter, meaning what color would things be if you looked through the filter at something?
- 6) Is the F814W a “red”, “green” or “blue” filter?
- 7) Is there any overlap to the filters?

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