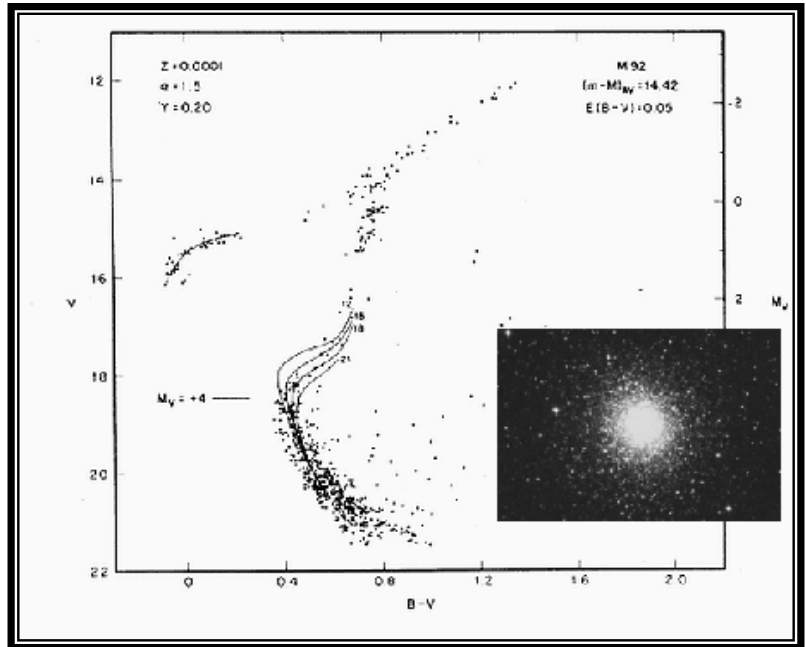


**Do something with your results:
Make a color-magnitude diagram**

Here's a CMD of M92, showing the magnitude as measured through the V filter compared with the colors as given by B - V.

The field of stars that we have been working with for the past few exercises must comprise just a small part of this cluster. You will be discovering on which part of the CMD the stars for which you have been doing photometry lie.

In this part of IRAF 5, you will be reviewing much of what you've learned over the quarter so far as you start from "scratch" installing and using a program that will match the stars you extracted from the visual and from the blue images.



Obtaining the "match" program

This program, written in C and PERL, is a terrific time saver. Following are the steps you should use to install the program in one of your directories.

- Make a subdirectory in your working directory called bin.
- Download the "gzipped" tarball [match-0.8.tar.gz](http://spiff.rit.edu/match/match-0.8.tar.gz) from <http://spiff.rit.edu/match/> into the subdirectory "bin."
- "Unzip" and extract the files.
- Read the on-line [README](#) for match-0.8, it tells you how to install and check match-0.8. (NOTE: there is an error in this file. The line "- cd match-0.6" should read "- cd match-0.8")
- Follow the directions in the README file (omit the hyphen that starts each line) through the line "make check."

Summarize here, as much as possible, what you think the "./configure, make, and make check" commands are doing:

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One of the extracted files is called “match.html.” It describes how to use match to extract the information for stars that are “matched” in both the visual image and the blue image (in this particular case.) You should read through the Introduction, Preparing the Input, and Usage section of the manual. The following is a summary of some of the steps to help you.

Within IRAF, extract the following information from your two *.als.1 files. Done correctly, your information will already be in the proper format for running match.

ID, XCENTER, YCENTER, MAG, MERR

The example given works fine for our use (*italized* words require your actual file names):

```
match starsA.dat 1 2 3 starsB.dat 1 2 3 outfile=matched id1=0 id2=0
```

Obviously match **must** be run in the directory where you have your star lists. The star lists are not in your /bin/ directory, nor should you move the match executable file to your working image directory. Not good form, as you may wish to use the program for other things, and you don't want to go copying or moving it all over your directories. Write down here the command you would use to run match within the constraints just listed (you can do it on one line):

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Compare the results side-by-side by using the following command within Linux:

```
diff -side-by-side *mt* | less
```

Making a CMD of your results using SuperMongo (SM)

If you do not know how to graph via SuperMongo, you need to work through (it is fun and short):

http://www.astro.washington.edu/astro480/sm_exercise1.pdf

If you do know SM, you should already know how to do this. In either case, here's an example for the macro:

```
cm
erase
ctype black
data matched.mtA
read {v 4}
data matched.mtB
read {b 4}
set b_v = b - v
limits b_v 25 17
box
points b_v v
xlabel B - V
ylabel V
```

Your color-magnitude diagram should be turned in with the exercise sheet for IRAF 5. You can choose to email me your graph in postscript format rather than print it.