Part III

ADVANCED USE and APPLICATIONS

Chapter 10

Data Analysis

10.1 The data comparaisons

BDA offers a number of facilities to analyse the data. At present, they concern the UBV (pe, pg, CCD), Hβ and Vsini data and the individual radial velocities. The results of the analysis already obtained on UBV photoelectric data may be displayed with the option "-y". The interactive analysis also provides a graphics facility which is very useful to check for trends in the parameter differences.

> `ngc 6322`	cluster chosen for the example
> `ubv -c`	starts a fortran programme
> `compar ubv`	is an alternative syntax

```
Enter the first reference:                        461
Enter the second reference:                       902
Number of stars to suppress:                        0

Do you want to look at the resulting file (y/n)?    y
Do you want to plot the diagrams (y/n)?             y

Give the y parameter:                               4
Give the x parameter:                               4

What do you want to do?                             h
- suite -                                    "return"
What do you want to do?                             z
Give the limits (l r t b):              0 1.6 .5 -.2
What do you want to do?                             r
Give your choice:                                   1
- suite -                                    "return"

What do you want to do?                             a
Give the y parameter:                               1
Give the x parameter:                               1
```

```
          What do you want to do?                          f
```

You may start this process from the menu for data analysis:

```
> ana
Give your choice:u
```

or directly from the main menu:

```
> go

          Express your wish:        ana
               Give your choice:    u
```

In the interactive way, you can also compare any of the ubv, pgh, ccd or sit data by using the following syntax:

`> ubv -c pgh`	compare the UBV photoelectric and photographic data
`> pgh -c ccd`	compare the UBV photographic and CCD data

The programme asks for the respective references and then behaves as described above

10.2 Comparaison of the V magnitudes

10.3 Comparaison of the colour indices

Chapter 11

Photometric Diagrams

11.1 The UBV system

If SM is you already installed, you can try the following commands. In the command mode, photometric diagrams in the UBV and related systems is obtained with the command `diag`. By default, the file *ubv.cmd* is used and the diagram is (V, B-V). The parameters may be changed with the menu options (8 o). To plot UBV diagrams from CCD data, enter `diag ccd`. The program will ask for the reference, enter 0 if you do not know it. Possible types are: ubv, pgh, ccd, sit, cam, cmd, hrd. cmd is the default type. The file has one line per star.

The main menu also offers some facilities to plot photometric diagrams through the option `pho`. This starts a pull down menu which offers predefined common diagrams. The same menu can be directly called by `diaphot` when you already are in a cluster directory. It works correctly, although I did not have time to prepare all the necessary scripts. Note that it only works with files containing mean data. These have not been systematically computed for the UBV system. The present uvby files do not contain the V magnitudes; these have to be included in the next version of the uvby mean catalogue.

Thie example given below shows you the possibilities and the philosophy of the whole thing.

SM opens a graphics window and the program presents you a compact menu which allows you to perform various actions on the graphics:

```
Box, Dimension, Title ................. 1
Modulus, Reddening .................... 2
Isochrones ............................ 3
Double Stars .......................... 4
Membership ............................ 5
Identifications ....................... 6
Selections V or x,y ................... 7
Hardcopy, Other, End .................. 8
```

After you choose one of the possibilities, a second menu be presented, corresponding to the topics selected. For example, for 1:

```
Change of the limits .................. z
Change of the box size ................ t
Definition of the size in cm .......... T
Change of the expand factor ........... x
Definition of a title ................. l
Print of the cluster parameters ....... L
```

If necessary the program will ask you for the values of the parameters you want to change.
If you do forget the reference number, you can also use the following syntax:
> `diag ubv` without argument

```
Which reference?          h

                    produces an output equivalent to
                    "ubv -d" or "detail"

Which reference?        324

Which parameter en y?     v

Which parameter en x?   b-v
```

11.2 The Geneva system

11.3 The uvby system

Chapter 12

Calibrations

12.1 The Geneva system

12.2 The uvbyβ system

12.3 The DDO system

12.4 The Washington system

Chapter 13

Radial Velocity

13.1 The menu avr

13.2 Spectroscopic binaries

Chapter 14

Integrated Colours

Chapter 15

Star Membership

15.1 The Expert system