Peoples Photometer - Quick Guide

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1993 February 9

1. **At the beginning of the run** Make sure that the photometer is mounted so that the TV Camera is to the East when the JKT is East of the pier. In this orientation the two apertures of the photometer are East-West and it is easy to move a star from one aperture to the other. If they are positioned North-South then the backlash in declination makes it difficult to move a star from one aperture to the other. If the Peoples Photometer is not orientated correctly ask the Engineering staff to rotate it.

   The Peoples Photometer has two channels called Romeo and Juliet and there are two pairs of filter slides in routine use. One pair holds Johnson UBV and Kron-Cousins RI filters; the sixth hole used to contain β sources for calibration but these are no longer present. The second pair contain Strömgren $uvby$ filters and broad and narrow Hβ filters. The Romeo and Juliet filter slides are not interchangeable. Decide whether you want to use the Johnson or the Strömgren filter slides and ask your Support Astronomer to mount them for you.

   There is convenient software in PPAS for two modes of observing:

   (a) PP22 uses the Peoples Photometer in its two channel mode. There are two apertures separated by 172 arcsec which serve the two channels. While the star is placed in the Romeo aperture the Juliet channel is used to measure sky and conversely.

   (b) PP11 uses only the Romeo channel and is intended for use in crowded fields where there is a danger of unwanted stars appearing in the sky aperture.

   The aperture slide has three positions; the middle one (2) is always used for TV viewing. The other positions hold interchangeable plates pierced by pairs of apertures for PP22 or single apertures for PP11. A wide variety of aperture plates is available with apertures from 0.5 to 10 mm.; the JKT scale is 13.8 arcsec/mm. Decide what apertures you want and ask your support astronomer to mount them for you.

2. **At the beginning of each night** Check that the dark slides are closed. The EHT to the phtomultipliers and the rest of the electronics should be left on day and night.

   The ICS PE3210 should also be left running at all times. Check that it is running and sign on:

   SI ABC,5,5

where ABC signifies your initials and 5 is one of the accounts chosen from the white board which nobody else is using.

SET GR 181

This enables you to dump your data to Exabyte.

ADAM

and follow the prompts for the f/15 focus and the Peoples Photometer. This leads you in to the PPAS software. You will be using either the UBV or STR photometric systems and the STRSKY mode. You will be prompted for the name of your data file; it is usual to start with a new file for each night and to name it after the day of the month. If you use an old file you must type WARMST.

Check that the pneumatics are working correctly by typing PPTEST. If there are any faults reported tell your support astronomer or call the duty tech.

Check the dark counts by typing DARKCNT. The dark counts should be roughly 4 and 8. The dark slides are not perfectly light-tight and the dark counts apparently rise to about 8,12 when the fluorescent dome lights are on. Run DARKCNT first with the fluorescents on and then with them off and check that there is a distinct drop. This checks that the photometer is light sensitive. If the dark counts are 0,0 you have a real problem so call for help.

3. **Observation Definition Files** These are described in the PPAS manual but a simple programme can be set up as follows. Type

   USEALL (observer's initials)

   and then SETOBJ to form a catalogue of stars and standards you intend to observe. This last step is not essential as you will gradually build up a .OBJ file as you enter in the position of each star as you observe it. The important command is:

   SETSEQ P1

   where P1 is a convenient sequence name and a typical sequence for P1 would be:

   U-U-8: B-B-2: V-V-2: R-R-4: I-I-8

   which would be suitable for standard stars. You can set up further sequences P2,P3 etc with 2* and 4* the exposures for observing fainter stars. It is best not to have sequences totalling more than a hundred seconds because defective telescope tracking may carry the star (partly) out of the aperture.

The RUN files are not generally used.

4. **Twilight** With the telescope in the zenith type:

   SLIDES 1 2 1 1 or SLIDES 1 2 3 1

   Depending on whether you want to use the aperture(s) in position 1 or 3. If in doubt use the smaller aperture(s). Turn up the TV gain carefully until you can see the apertures clearly delineated by the twilight sky shining through them. Use the 'DRAW CIRCLE' command with the Grinell to delineate the apertures. If you have trouble with the Grinnell you can draw them in with felt tip but this is not so good because of parallax.

5. **The first standard of the night** Remember to open the dark slides. Send the telescope to the first standard of the night and view the whole field through the TV. Type:

   SLIDES 1 2 2 1

   and turn the TV gain up carefully and you should see the star somewhere in the field. SNAFU the telescope to the Romeo aperture; this is the left hand one on the screen which is designed to be on the telescope axis. When you are satisfied with the centering in the Romeo aperture press the ACK button on the telescope console. Then type SNAFU/A and centre the star in the Juliet aperture. When the star is centered again press ACK a second time. Pressing 'NOM' and 'A' on the telescope console should place the star in the Romeo and Juliet Apertures. Forget the Juliet aperture if you are only going to use PP11.

   DEFSEQ P1 if this the sequence you use for standards

   PP22 or PP11 and follow the prompts.

6. **Subsequent Stars** Enter their positions at the telescope console and slew the telescope to them. SLIDES 1 2 2 1 will show the whole TV field and enable you to acquire the star. There should be no need for further SNAFUs. If the star is fainter than the standards then use a sequence with longer integration times.

7. **The PC Data Logger** There is no log kept automatically such as there is for the CCD Camera. You are recommended to use the PC data logger in the console room; instructions are given below. If you are really old-fashioned and are not afraid of writer's cramp you can enter the observations in a ledger.

8. **Continuous modes** MONITOR, SLCONT and FCONT are continuous modes which are described in the PPAS manual. These programs do not set the aperture automatically as PP22 and PP11 do. Remember also that there is no auto-guider with the Peoples Photometer and the centering of the star should be checked every 100 seconds or so.

9. **Warnings**

   (a) Only observe if you are confident that conditions are photometric *ie* if there are no clouds in the sky. The Peoples Photometer does have a beam-splitter mode for use in non-photometric conditions but there is no software in PPAS to exploit it.

   (b) Although the filters are designed to reproduce the standard photometric systems they are not absolutely correct so observe ample standard stars to determine the colour equations.

   (c) For accurate photometry it is essential to determine the extinction each night and not to rely on mean values. It is good practice to enquire the values determined in V by the CAMC. To the first approximation the variations in extinction can be assumed to be gray.

10. **Dead-Times** The dead-times determined in 1992 December were:
    Romeo 48.5 nanosec
    Juliet 45.3 nanosec
    Each with a standard error of 1 nanosecond.

11. **End of the Night**

    (a) Close the Dark Slides

    (b) FITSOUT your data file to Exabyte

Appendix - JKT PC Data Logger

1. The JKT has a PC/AT Data Logger which can be used to copy parameters from the JKT INFODISP screen to its hard disk and output them to its line printer. It has no connection to the instrument computer but instrument data can be entered by hand at the console as observations are made.

2. The printer is an Epson LQ-1050 and the replacement ribbon is an Inmac Good Impression 6419. We hold replacement ribbons and the one in the printer was last replaced on 1992 November 29. Set the paper division exactly on the lower rollers.

3. The PC will normally be found on, and displaying the JKT prompt in blue at the bottom left hand corner.

4. Check that the PC calendar is correct by entering 'Date'. The PC will display the supposed date. If correct press $< cr >$, otherwise enter the correct date.
5. Check the PC clock is correct by entering 'Time' . This is often wrong by a few seconds. Set a time about 30 seconds in advance and $< cr >$ on the exact second.
6. To start the program enter LOG $< cr >$ at the keyboard
7. The functions available from the keyboard are:
   - 1. Change Header Parameters
   - 3. Edit/Delete one entry in the log
   - 4. Print the log
   - 5. Enhancements to this software
   - R New Run
   - X End Program
8. Change Header Parameters if necessary at the beginning of every night, press R for every observation and X at the end of every night.
9. The function switches are as follows:
   - F1 Help (No help defined)
   - F5 List
   - F7 Run?
   - F8 Last Run (Right Arrow)
   - F9 Previous Run (Left Arrow)
   - F10 Next Run (Right Arrow)