Publ. Astron. Inst. ASCR 99, 72–73 (2002)

Driving of the coudé slit spectrograph and automatized saving of data

Jaroslav Honsa, Miroslav Šlechta

Astronomical Institute, 251 65 Ondřejov, Czech Republic;
honsa@sunstel.asu.cas.cz; slechta@sunstel.asu.cas.cz

We shortly describe the connection between the user-interface and the coudé spectrograph. We present a schematic picture of the internal network connecting the telescope, coudé spectrograph and data server where exposed data are archived.

Keywords: Astrophysical Data – Slit Spectrographs

1 Introduction

The user-interface, communicating with an observing astronomer, is installed on the Linux computer. The handling of the user interface together with recommended observational habits is presented in another paper published in this volume. For the detailed description and explanation see therein and in Škoda et al. (2001).

The user interface is comfortable, nevertheless complicated system which communicates with the telescope, spectrograph control computer, CCD controller and also with the data server. The data from CCD chip are automatically sent to the data server and saved on disc array. Later, the disk array is stored once a day to 100MB ULTRIUM tapes; usually we make incremental backups (differences with respect to the previous stored state). Once a week we run full dumps. Independently, all raw data are archived on CD-ROM from time to time.

The scheme of the connection is presented on the Fig. 2. Detail of the control units is on the Fig. 1.

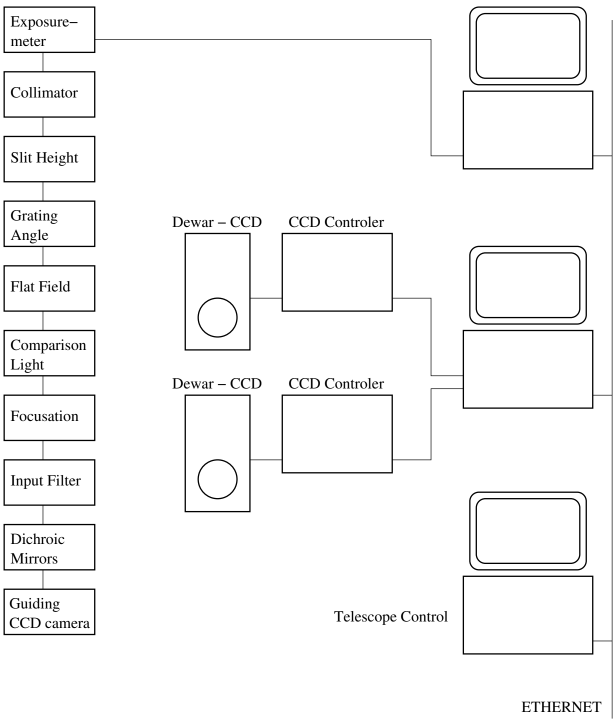

Fig. 1: Driving the spectrograph control units.

2 Driving the spectrograph; description of codes

2.1 BIAS code

The code **BIAS** delivered with the CCD camera (and considerably modified by J. Honsa and P. Škoda) enables the exposing of spectra with CCD. The main goal of the BIAS is to create a comfortable user-interface to control CCD but it also contains another functions, such as driving the coudé spectrograph and reading data out of the Master (the computer driving the 2-meter Telescope).

After the start, BIAS opens three windows: the status window, the window for the interactive reading commands and the graphical window for the presentation of exposed spectra. It is allowed to expose spectra (flat field, comparison spectra or object) either with pre-selected exposure time or with an exposure meter (this is supposed to be used in stellar spectra). Switching elements (mirrors, prisms) is automatised and the status of all elements is depicted in the status window.

Driving the spectrograph is realised through the daemon `coserver` which is installed in a special server computer. For this communication, some specific functions are included into Bias: the function for the UDP connection with the coserver, function for the sending commands and for the reading status of elements of the spectrograph. These data detect the finish of the

It is necessary to read some parameters from the Master which should be included to the head of the FITS file, which is exposed (for example the position of the telescope). It is arranged through the mediation of the code `2mpar` which saves selected parameters to the file `/tmp/vypis_2mpar`; the bias will read them and save to the database in the file `/tmp/headersdb`; later, the data are read out just at the moment when the FITS-file is created.

2.2 Coserver-daemon

The `coserver` is a daemon which periodically reads serial port (`/dev/ttyS1`) with data sent by control units of the coudé spectrograph and at the same time works as a server which handles requests for this data on one socket (port 9998) and the other socket (port 9999) takes controlling commands for the spectrograph and puts them down to serial port. The commands must already be in the right syntax for direct handling of units, the server only copies them to the serial port, it doesn't do any checking. The net connection uses UDP protocol.

A new process is started for the reading of the serial port. The process uses shared memory to store data and deliver it to the parent process.

Both serial port and communication socket are open in blocking mode which means that when there are no data on them, the appropriate process is stopped and the daemon doesn't consume any system resources.

The reading requests from net and sending commands to serial port are in common loop which means that no commands are being sent if the reading is stopped. To have absolute coordinates for focusing (there is only a stepping motor), the program keeps count of steps in a file and uses it at start (`/var/log/coserver/focusa` and `/var/log/coserver/focusb`).

Acknowledgement

This work was supported by projects AV0 Z1003909 and K2043105 and by grants GAČR A3003805 and GAČR 205/02/0445.

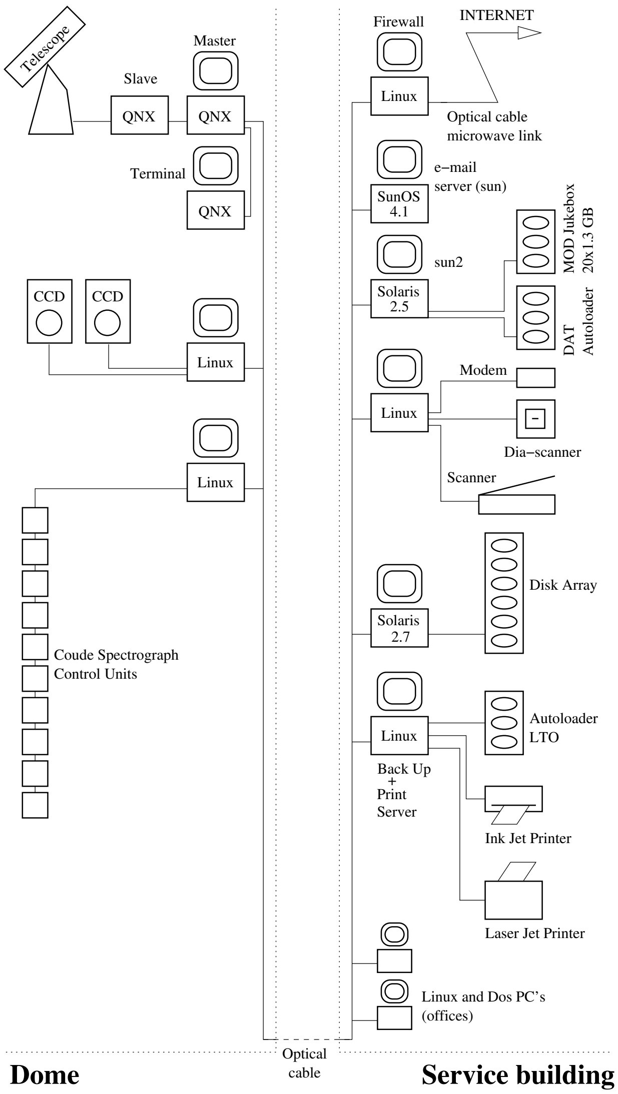

Fig. 2: Scheme of the driving the coudé spectrograph and connection to the service buildingi, where the data server archives exposed data to the disk array.

References

Škoda P., Honsa J., Šlechta M., 2001, in Astronomical Data Analysis Software and Systems X, ASP Conf. Ser., eds. F. R. Harnden Jr., F. A. Primini and H. E. Payne, 238, 423