relevant parameters (slit width, exposure time, amplitude, temporal frequency range . . .) choosen accordingly and modified as those ones change. Here is certainly the difficult side of this technique!

Medium resolution imaging is much less affected by the seeing. The performances are derived by taking into account the system or sky limitations as in photometry. It can be seen (Table 2) that the sensitivity is of course lower than with a photometer but a resolution of 0.5 arcsec can here be routinely achieved. This mode can also be an excellent back-up in case of bad conditions.

Examples showing the result of two opposite optimizations are shown in Figure 2 and 3. The data were obtained under good conditions, yet for Figure 2 the number of scans was not large enough to reach the background limitation. In this case the uncertainty computed at each spatial frequency results essentially from the seeing statistics (note that the values in Table 2 assume a stationary seeing); as contiguous points are not independent, the visibility may present some oscillations which are not real. That is why such a visibility must be fitted by a model of at most 3 or 4 parameters.

Treatment

Some reduction is done in real time aiming to the estimation of the observation quality but the final results rely on a more sophisticated treatment applying algorithms of image selection according to the seeing. Figures 2 and 3 display data from March 1986 reduced in this way with the software available at ESO (at La Silla and Garching, on an HP computer) and show the standard outputs of it. For many sources, these will be sufficient to extract the useful information by means of simple fits. The reduction package includes a fitting module with a model of one to three components of variable size, fractional flux and location; their individual intensity distribution being choosen from a set of analytical functions or stored in the form of a discrete set of intensities.

More elaborate processes like co-added-images deconvolution or image restoration are not currently included in this package. The observer willing to apply his own method can either use the raw data stored on tape as blocs of scans or the files created by the reduction software containing processed data like sorted scans or calibrated power spectra.

Contributions

This specklegraph was designed and integrated under ESO contract at Observatoire de Lyon (sup. F. Sibille), INAG (M. Jegou) and Laboratoire IR de Meudon. The ESO infrared group contributed to the qualification and tests. The software was provided by C. Perrier with support from F. Gutierrez. Special thanks are due to T. Bohl, C. Marlot and J. Roucher who were deeply involved at the integration or testing stages.

The Fast-Photometry Facilities at La Silla

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We briefly present in this note the available programme (and its environment) to perform fast photometry at La Silla. This facility has become available on the mountain a long time ago already but recent discussions with some Visiting Astronomers tend to show that potential users are not yet well aware of it. Many programmes have already been carried out with this mode of observing, mainly in the infrared but also in the visible. Let us mention, for instance:

– Occultations of stars by planets to discover and/or study rings as well as to determinate the temperatures and variations of the atmospheres of the planets. (See for instance: Bouchet et al., *The Messenger* No. 26, Dec. 1981 and Haefner et al., *The Messenger* No. 42, Dec. 1985).

– The mutual phenomena of Jupiter, observed through the international PHEMU 85 campaign (Arlot et al., same issue of *The Messenger*).

– Search for flare or rapid variations in cataclysmic variables (Motch et al., *The Messenger* No. 26, Dec. 1981).

The "Time Series Photometry Programme" (TSPP) consists of a set of counters that are read each millisecond and can be used at any telescope equipped with a standard 21 MX computer extender, which are presently the ESO 3.6 m and 1.0 m, and the Danish 1.5 m. However, for special cases it could be possible to implement it at the ESO 50 cm too. Up to 4 counters are synchronized with a 1 Kilo-Hertz signal from a CERME clock display unit. This clock is connected to the ESO Universal Time. The computer is connected to the CERME to read out the UT. Every 10 seconds the synchronization of the computer internal time and the CERME time is checked. In case of a lost synchronization, the programme will reset it at the next 10th second change (in that case, 10 seconds of observations would have been lost). The CERME clock provides also a 1 kHz signal to read the counters each millisecond.

The user chooses the time resolution called TBASE. The acquisition is made by adding the counts read each millisecond from the scalers during the time TBASE and saving the sum in a floating point internal buffer. When this buffer is full, it is sent to the magtape unit. This procedure is made through two independent buffers. While one is saving data, the other one is dumping its data to the magtape, and reverse. In this way no data are lost during the external dump.

The computer is also connected to a Strip Chart recorder which enables the observer to see ON LINE the input data at a time resolution selected by him. The programme foresees the possibility to be connected to the ESO Standard photometers to provide control over the filters and diaphragm wheels and over the shutters.

Data obtained from the TSPP acquisition environment can be reduced at the HP-1000 system at the computer centre at La Silla. This is done using several programmes written by Ch. Motch which:

– list a catalogue of all the records present in a magtape file;

– read several consecutive records, plot any part of the data in memory, make a listing of the measurements, change them eventually, compute averages and dump data in a disk file;

– copy records in any file from magtape;

– perform a Fourrier transformation on a block of 2,048 measurements in the same channel;

– compute autocorrelation function on blocks of 2,048 measurements in the same channel.