

THE NEW SOLAR SPECTROGRAPH AT PIC DU MIDI OBSERVATORY

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The solar department of the Paris Observatory has built a modern spectrograph for the study of the fine structure of the photosphere and the chromosphere. The site selected is within reasonable distance of Paris and affords very fine seeing. Both selection criteria were satisfied by the telescope of the "Coupole Tourelle" of Pic du Midi Observatory. The spectrograph resulting from our studies was mounted in September 1980 and the first spectra have been made. Indications are that we may expect high-quality observations in the future.

1. The Instrument

The telescope is a refractor with a focal length of 6.45 meters and an aperture of 500 mm (F/12.5). One fifth of the solar image is enlarged 5 times ($\phi_0 = 300$ mm or $1'' = 150 \mu$) and refocussed on the slit of the spectrograph.

A fine guiding system is provided on the preliminary image given by the telescope.

On the fork of the telescope was mounted a Littrow-type spectrograph with a 8 m collimator mirror (Fig.1). It is equipped with three interchangeable gratings :

grating	grooves/mm	θ_{blaze}	λ_{blaze} I ord.	lin.dispersion
BLD	600	$36^\circ 52'$	$2,0 \mu$	$0.60 \text{ K mm}/\overset{\circ}{\text{A}}$
BL2	600	$48^\circ 36'$	2.5μ	$0.73 \text{ K mm}/\overset{\circ}{\text{A}}$
BLS	300	$63^\circ 26'$	6.0μ	$0.54 \text{ K mm}/\overset{\circ}{\text{A}}$

At present the spectra are taken with 35 or 70 mm film or 9 x 24 cm plates. In the future, diode arrays will also be available.

In addition the spectrograph is equipped with a MSDP system (Mein, 1977), see also P. Mein's contribution in these Proceedings. A simple tilt of the grating changes from single to double pass, and at the same time the slit is replaced by a window of $1' \times 6'$.

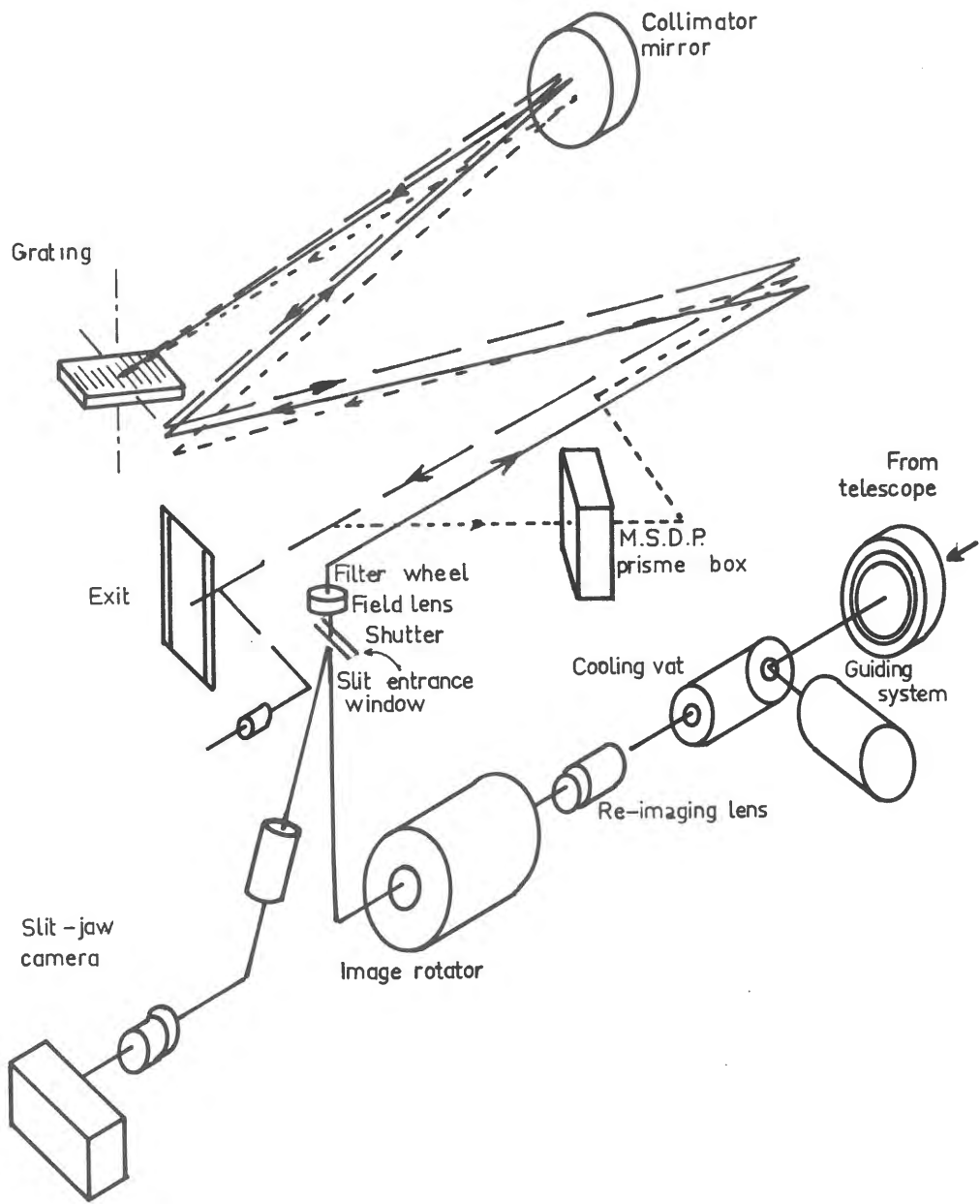


Fig. 1

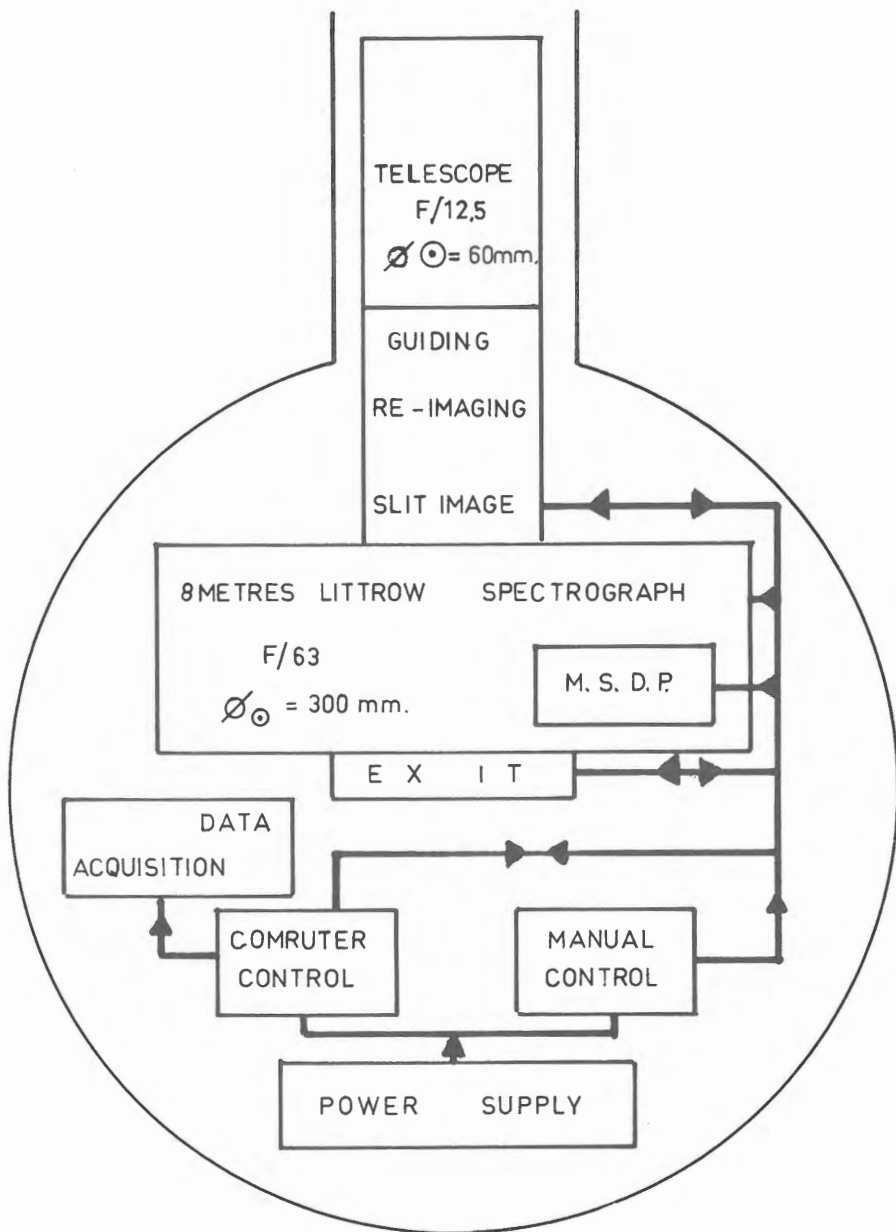


Fig. 2

As the telescope is a refractor, instrumental polarization is very low, thus permitting good polarization measurements. Therefore, a polarization analyser (Semel, 1980) will be set in the primary focus of the telescope.

2. Organization

The general organization of the telescope-spectrograph is given in Figure 2. At present (October 1980), only the manual control is operating, in the near future a micro-computer will direct the observations and command data acquisition on film or with diodes.

REFERENCES

- Mein, P. : 1977, Solar Phys. 54, 45.
Semel, M. : 1980, Astron. and Astrophys. (in press).