

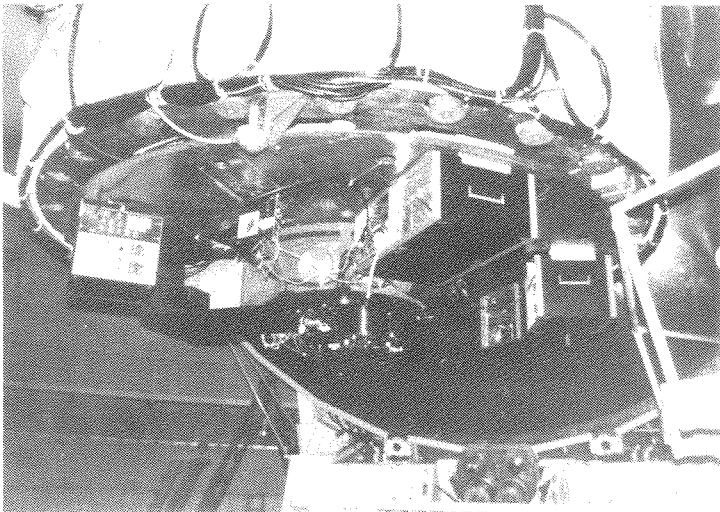
LATEST NEWS ON INSTRUMENTATION

Cassegrain environment

The Cassegrain environment is the collective name for a large number of mechanical and electrical facilities located at the Cassegrain focus. During the past semester, we took a big step towards completion of the environment with the installation of the rotating stage and its associated cable wrap-up. The stage which has the same diameter as the primary mirror cell, can be rotated through 180° controlled by a handpaddle. Attached to the stage are:

- the Cassegrain bonnette (TV guiding system)
- 2 CAMAC crates plus 2 electronics racks providing 35 inches (20U) of 19-inch rack space
- a manifold for pumping on cryogens
- cable connections to the Observers Room for coax and twisted - pair cables
- receptacles supplying electrical power at: DC +5V, ±12V, ±15V, ±24V, ±48V; AC 120V 60Hz, 220V 50Hz, 208V 60Hz (European and North American receptacles for the latter)
- an intercom station and TV monitor connected to the video distribution system
- handpaddle connections for control of telescope motion, focus, collimation and rotation of the environment.

The availability of the Cassegrain environment greatly facilitates the rapidly increasing use of this focus.



General view of the new Cassegrain Environment showing the rotating stage with the bonnette (built by OHP) at the center and around it the electronics racks. Khairy Abdel Gawad and Pat Waddell were responsible for the mechanical and the electrical design respectively. Walter Swieda (mechanical) and Charles Pomaski (electrical) were the principal technicians involved.

Bolometer

The germanium bolometer performed successfully during engineering tests in May and is now a commissioned instrument. The "limiting magnitude" (defined as the magnitude which yields $S/N=1$ for 1 hour integration) in the N filter ($\lambda=10.5\mu\text{m}$, $\Delta\lambda=5.1\mu\text{m}$) was measured at 9.0. This corresponds to a Noise Equivalent Flux Density of $0.6 \text{ Jy sec}^{1/2}$. It is expected that the thermal background from the telescope can be further reduced and that this, together with optimization of the bias current, will yield an additional 0.5m of sensitivity. The filters in the bolometer are as described in Table 9-8 of the Observers Manual, with the exception of the $33\mu\text{m}$ filter which we do not have at present.

Reticon noise reduction

The read-out electronics for the 1872 element Reticon used with the coude spectrograph has been upgraded at the Univ. of British Columbia as announced in Bulletin N°8. Our Reticon is expected to be available for the first coude run of the second semester and to perform as well as similar units modified in the same way. This means that we can expect a noise figure of approximately 400 é per readout - roughly 1/3 the previous value. The resulting speed increase will range from the full factor 3 at $S/N=100$ to a factor of ~2 at $S/N=1000$. Photon shot noise will now dominate for exposures with $S/N \leq 300$.

Holographic grating

We have taken delivery of a 1800 line/mm holographic grating for use with the f/7.4 coude spectrograph. In first order, this will provide dispersions of 2.2, 2.0, and 1.7 Å/mm at respectively, 4000, 6000, and 8000 Å. The new grating is expected to be available for use by visiting observers for the 1st semester of 1984.

F/8 cassegrain secondary

As discussed in the last issue of the Information Bulletin, the f/8 secondary produces spherical aberration at the nominal focal position. One possibility for making the necessary slight correction to the mirror figure is mechanical deformation, and an experiment to this end is now underway. An inflatable rubber bag has been installed in the mirror cell. This will apply positive pressure to the central section of the mirror while suction on the outer portion of the mirror back will continue to hold the mirror against its defining pads. Calculations indicate that by judicious choice of the pressures the mirror can be deformed to a perfect figure. The first tests of the "push-pull" mirror cell will be in July.