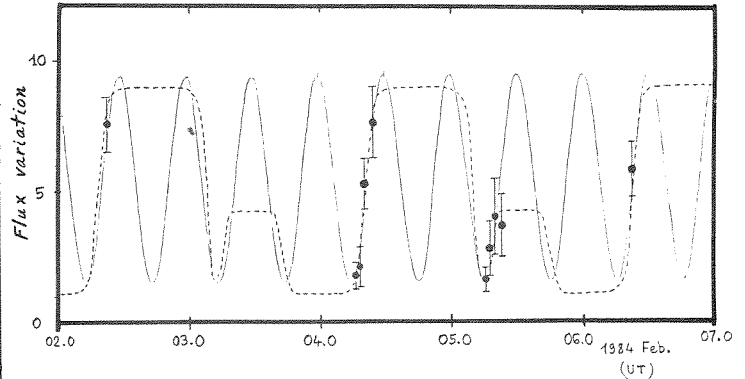


ROTATION OF COMET P/HALLEY

Prime-focus electronographic photometry of Comet P/Halley's nucleus was carried out during the nights of February 2 to 6, 1984 by O. Le Ferre, J. Lecacheux, G. Mathez, G. Lelièvre, J. Baudrant, and J.P. Lemonnier. The mean heliocentric distance of the comet was $r_h = 7.95$ AU. The observations were restricted to zenith distances smaller than 40° and to the standard B band. The automatic guider was used, but the position was actualized every 1.5 minutes to fit with the predicted topocentric motion. The comet was successfully identified on twelve plates and properly measured on ten plates. Typical exposure durations were 45 min. on Kodak KO 139 and Ilford K5 electron-sensitive plates, giving a signal-to-noise ratio of ~ 6 for an untrailed star of $B = 24.4$ (KO 139 plates); typical image quality was 1.3 arc seconds.

The measured amplitude in B was 1.7 magnitudes (between $B = 24.5 \pm 0.3$ and $B = 22.8 \pm 0.15$), but the true amplitude possibly exceeded 2 magnitudes. Sudden rapid increases were measured at least twice and the phenomenon seemed to recur at constant time intervals.

Such brightness variations very likely reflect the rotation of the nucleus. Using all measurements available between January 1984 and March 1984, it seems that the best candidate spin-period in the range of 8-48 h is around 16 hours. This result, assumes (1) that the brightness modulation is caused by the transit of bright areas of albedo 0.4, against darker material of albedo 0.02, and (2) that the spin axis is roughly perpendicular to the line of sight.



Data obtained at CFH and possible light curves.

SEEING CONTROL MEASURES AT CFHT

Excellent seeing has become the trademark of our telescope. Although image stabilization and processing techniques are around the corner, there is no substitute for intrinsically good images; from the very start our observatory was designed so as not to degrade the superb seeing that prevails on Mauna Kea.

Mauna Kea is a very windy site and the telescope must be protected against buffeting for winds up to 40 knots if one is not to lose too much observing time. Therefore our observatory dome is of traditional design with an up-and-over shutter and windscreen, in contrast to the present trend of wide open domes and low thermal inertia exemplified by the Multi-Mirror-Telescope. A very complete insulation and ventilation system protects the telescope against solar radiation and ambient daytime temperature rise, as well as from the heat generated within the building. An active cooling system absorbs the remaining calories so as to always maintain the telescope and its massive optics at a temperature appropriate to nighttime observing. This concept works well on Mauna Kea because of its high altitude and because of the permanence of weather in the Pacific tropics; the average temperature change during the night is only about 1.3°C , and the change from one night to the next is usually less than 1°C .

Of course, when we had our first light in 1979 these simple principles were far from being fully implemented, let alone optimized. One of the most difficult tasks was the elimination of heat leaks, and it is only now that we have really achieved the status envisaged originally.

The telescope pedestals, which are resting in a warm area, were transmitting heat to the observing floor and had to be heavily insulated.

Generation of heat inside the building has been reduced and only essential rooms are heated and lit. Critical doors have been sealed and heated areas isolated by additional "air locks". Gaps around the telescope pedestals and cable trays have been plugged. Perfect and complete sealing of such a large building is almost impossible in practice. We have therefore increased the negative pressure in the building to ensure that hot internal air will not plume out of the remaining numerous leaks in the observing floor, telescope base, access doors and building curtain wall. The extracted air which now reaches the enormous flow of 14 cubic meters per second is exhausted away from the building through a large underground duct.

A better seal has recently been installed on the dome skirt, and an inflatable seal will be installed this summer on the shutter. In addition to preventing leaks during storms, this will minimize entry of warm air during the day.