INITIAL RESULTS WITH THE OBJECTIVE PRISM OF THE UK SCHMIDT TELESCOPE

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The U. K. 1.2m Schmidt objective prism with its small apex angle (23'12") and high ultraviolet transmission is a particularly powerful tool for the study of faint objects. It has been shown that objects of 20^m and fainter can be reached on a 60 minute exposure of unwidened spectra on hypersensitized IIIa-J emulsion. A description of the prism and its performance has already been published (Nandy et al. 1977).

Since the commissioning of the prism in 1976, spectra of a number of fields have been obtained, in many cases following requests by users of direct photographs to supplement their photometric observations. However, a number of specifically spectroscopic projects are also being pursued. Observations of quasars are being made, as described at this colloquium by M. G. Smith. At Edinburgh, a survey of the galactic polar region by Mrs. A. Savage reveals about 200 quasars on each photograph (6° x 6°) to magnitude below 20^m.

K. Nandy (Royal Observatory Edinburgh), D. Emerson and B. D. Kelly (University of Edinburgh) are engaged in spectral classification of faint stars and galaxies, as described by K. Nandy at this meeting. Spectra are scanned automatically by the COSMOS measuring machine of the Royal Observatory Edinburgh in its mapping mode, and they are photometrically calibrated by means of the step filter calibration recorded on each plate.

Spectra of galaxies, similarly scanned and calibrated, are being used by J. A. Cooke (University of Edinburgh) to derive radial velocities of galaxies. The spectral shifts are found from the positions of the two dominant spectral features, namely the G-band at 4300 Å and the metallic line "discontinuity" at 4000 Å, with respect to the sharp

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cut-off of the IIIa-J emulsion at 5380 Å. The method had previously been used with Curtis Schmidt spectra which have a higher dispersion, 1400 Å per mm at Hγ (Cooke et al. 1977). It has also proved entirely satisfactory with the U. K. Schmidt spectra, which have a dispersion of 2400 Å per mm at 4000 Å. Fields of one square degree are measured by COSMOS at a time. Each field contains about 5000 spectra of stars and galaxies of which about a third, in the magnitude range 16m to 18m, are of suitable photographic density for satisfactory photometry and feature recognition. Software has been developed which calibrates, reduces and calculates radial velocity in one operation. The recording of these spectra by COSMOS requires only 15 minutes for each area. Up till now a scanning spot of width 25μ has been used, sampling the spectrum at 16μ intervals. The spot is at present being replaced by an 8μ spot which will improve the performance of COSMOS for the recording of unwidened spectra (<3 arc seconds or about 50 micron width).

The U. K. Schmidt telescope is, of course, primarily concerned with completing the southern sky survey, so that no large scale systematic projects using the objective prism are being carried out for the time being. However, as the survey work decreases, it is hoped to devote a few periods of each year to prism observations, and in this way to begin to build up a collection of objective prism photographs of standard survey fields. Ultimately a complete prism survey is planned.

REFERENCES

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