

OBJECTIVE-PRISM RADIAL VELOCITIES AT HIGH LATITUDES

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Stock and Osborn (1972, 1973) have shown that objective-prism spectra taken with a conventional prism may be measured to produce radial velocities of sufficient accuracy for statistical purposes. They are determined by means of a third-order power series in both x and y coordinates. The same spectral-line measures can also yield positions such that proper motions can be determined if first-epoch positions are also available. For many stars, both tangential and radial velocities can be obtained with about the same error which is of the order of ± 20 km/sec. The field distortions caused by the prism are large but are constant and predictable to the degree that measured residuals are similar in size to those for direct images (Stock and Upgren 1968). A survey of a high-latitude zone between -30° and -35° in declination is underway and a catalogue of about 3000 stars has already been compiled by Stock. For each star, the catalogue lists an accurate 1950 position, spectral and luminosity type, apparent photographic magnitude, relative radial velocity and its weight, and the number of plates on which the star was measured.

The use of rapid scanning for objective-prism spectral types and radial velocities has been investigated using the PDS Microdensitometer of the Kitt Peak National Observatory for the measurement of the plates. If rapid scans can be made without loss of precision on the introduction of a systematic error, their great reduction of measuring time is of real advantage in the determination of these data for many thousands of stars.

REFERENCES

- Stock, J. and Osborn, W. 1972, in "The Role of Schmidt Telescopes in Astronomy", Conference, Hamburg, Germany.
Stock, J. and Osborn, W. 1973, in "Spectral Classification and Multi-color Photometry", I. A. U. Symposium No. 50, page 290.
Stock, J. and Upgren, A. R. 1968, Publ. Obs. Ast. Nacional, Univ. de Chile, Vol. II, No. 1.