HIGH RESOLUTION INTERFERENCE SPECTROSCOPY APPLIED TO ASTRONOMICAL INVESTIGATIONS (2000 TO 3000 Å)

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For orbiting astronomical telescopes and for spectroscopic studies from rocket and balloon-borne platforms the great angular dispersion of the Fabry-Pérot interferometer should permit easier guidance tolerance for a given spectral resolving power with the added profit of the physical compactness of an etalon spectrometer or spectrograph. In addition, the superiority in luminosity and illumination of the interferometer permits shorter exposures and greater time resolution.

A compact interferometer spectrograph for high resolution (0.016 Å) studies of the solar Mg II resonance lines (2795 Å, 2802 Å) and the neighbouring spectral region is described and the performance is illustrated with data obtained from two skylark rocket flights.

A new piezo-electric scanning Fabry-Pérot interferometer is described and preliminary results of spectral performance will be given.

DISCUSSION

J. H. Underwood: Can the analysis of your rocket data give you the Mg II line profiles for a particular point on the sun, or does each point on the profile correspond to a different part of the solar image?

B. Bates: Yes. Along a profile there is a change in position as well as wavelength. A spatial element corresponds to approximately 3.5 arc sec on the solar disk. In a balloon spectrograph to be flown in September 1970 the interferometer will be tilted in flight through small angles to change the recorded wavelength for each spatial region on the solar image.

D. D. Clark: Have you any data on the long term performance of the piezo-electric ceramic supports?

B. Bates: No.

K. Fredga: What is your finesse in the 2800 Å region in your flight instrument?

B. Bates: For the optically contacted interferometer at 2800 Å the recorded finesse is approximately 25 for an aperture size 1 cm diameter.

Labuhn and Lüst (eds.), New Techniques in Space Astronomy, 262.