THE ASTRONOMICAL JOURNAL

PUBLISHED BY THE AMERICAN INSTITUTE OF PHYSICS
FOR THE AMERICAN ASTRONOMICAL SOCIETY

VOLUME 69

1964 March ~ No. 1317

NUMBER 2

Abstracts of Papers Presented at the 115th Meeting of the American Astronomical Society, held 26–28 December 1963, at Georgetown University, Washington, D. C.

Radial Velocity Measurements from High-Dispersion Coudé Spectrograms. K. D. ABHYANKAR, *Nizamiah Observatory, Begampet, Hyderabad, A. P., India.*—Radial velocities of 63 G and K stars were measured on 143 high-dispersion coudé spectrograms obtained by Dr. O. C. Wilson at Mount Wilson and Palomar Observatories. Radial velocities from 22 *Fe* lines in the region 3700–3900 Å were invariably more positive with respect to those obtained from 20 *Fe*(+1 *Mn*) lines in the region 4000–4528 Å by about 1 km/sec. The difference ΔV_r (visual–ultraviolet) appears to be correlated with spectral type of the star; ΔV_r also seems to be different for dwarfs and giants. The cause of this discrepancy is unknown; but it vitiates accurate determination of radial velocities from these high-dispersion spectrograms.

Solar Spectrum Photographed to 33 Å. W. E. AUSTIN, J. D. PURCELL, R. TOUSEY, AND K. G. WIDING, *E. O. Hulburt Center for Space Research, U. S. Naval Research Laboratory.*—Spectrographs employing a 40-cm grating at 85° incidence with an aluminum filter 1000 Å thick to eliminate stray light were flown twice during 1963 in Aerobee rockets. On 10 May first-order lines were photographed over the range 44 to 630 Å with a 600-line/mm grating; on 20 September, through the use of a 2400-line/mm grating, spectra from 33 to 188 Å were secured with a resolution of 0.1 Å and wavelength accuracy of 0.03 Å for strong lines. Only higher-order lines appear between 75 and 148 Å because of the low transmittance of the aluminum filter.

About 50 emission lines were recorded from 33 to 75 Å; some 70 from 148 to 188 Å; 100 from 188 to 342 Å; and a few strong lines from 342 to 630 Å, where the aluminum filter transmittance is low,

amongst many higher-order lines. New identifications include *C* VI, 33.74 Å (Lyman- α); *C* V 40.3, 40.7 Å; *Si* X 50.5, 50.7 Å; *Si* XI 303.4 Å; *Al* X, 332.8 Å; and various lines of *Si* VII–XII and *Mg* VII–X.

For the most part, however, the strongest lines are unidentified, although at least 13 have been produced from wall material in the Zeta high-temperature plasma (Wilson, R., private communication). It appears probable that many will prove to be from *Fe* in intermediate stages of ionization since the walls of Zeta are of stainless steel. It appears, however, that only intermediate stages of ionization are involved, since the spectroheliograms show that the strongest of these lines, seen also in Zeta, are emitted over the entire disk with little enhancement in plages. Spectra of *Fe* IV and above are so incompletely known that the absence of identified extreme ultraviolet solar lines of *Fe* IV–*Fe* XIV is not surprising.

The Stability of Ionization Fronts. W. I. AXFORD (introduced by T. Gold), *Cornell University.*—The stability of weak *D*-type ionization fronts is considered, making an allowance for absorption of ionization photons in the *H* II region. It is found that the absorption produces a stabilizing effect and that only disturbances of very short wavelength can be amplified in conditions typically found in the interstellar medium. It is likely, therefore, that elephant trunks and globules are due to the presence of inhomogeneities already existing in the un-ionized gas at the borders of *H* II regions. The stability of strong *D*-type ionization fronts is a more difficult problem and it is not possible to give a solution at present; however, the necessary procedure is understood and we hope to give the solution shortly.