LATE-PAPER ABSTRACTS FROM THE 138TH MEETING OF THE AMERICAN ASTRONOMICAL SOCIETY, HELD 15–18 AUGUST 1972 AT EAST LANSING, MICHIGAN

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20.03.06 Hα and Hβ Photoelectric Photometry of β Lyrae.
E. F. GUINAN, G. P. McCOOK, and E. J. O'DONNELL, Villanova University. Hα and Hβ photometry of β Lyrae has been undertaken at Villanova University since 1970. Thus far observations have been secured on 45 nights with the 15-inch reflector using pairs of wide and narrow-band interference filters centered near the rest wavelengths of the Balmer Hα and Hβ lines respectively. The Hα and Hβ filter sets are similar in characteristics to those used by Abt and Golson (1966, Astrophys. J. 143, 306) and Crawford (1960, Astrophys. J. 122, 66) respectively.

New light curves were secured with the above filters and the following light elements were obtained: JJD 2440724.710 ± 12.9331. β Lyrae showed considerable complexity in its light variation both inside and outside eclipse. Asymmetries were present in the light curves secured in all of the filters with large cycle to cycle variations being present, especially during Max. I. The Villanova Hα and Hβ observations of β Lyrae were transformed to the Ro system of Andrews (1966, Mem. Roy. Astron. Soc. 22, 30) and β Lyrae system of Crawford. This permitted β Lyrae to be compared with normal B and Be stars observed in these photometric systems. The average values found for β and Hα at primary minimum and outside eclipse are as follows: Min. I (β = 2.33, Hα = +0.31) and Max. I (β = 2.46, Hα = +0.64).

20.04.05 Ultraviolet Photometry of B-Type Stars. R. L. BETTENWEBER, Space Astron. Lab., Univ. of Wisconsin - Photometric data for approximately 90 B-type stars, obtained via the Orbiting Astronomical Observatory (OAO-2), is presented. This sample is a major fraction of the objects in this interval of spectral types observed by the OAO which have, at the same time, adequate UV colors, spectral classifications and V sin(i) data. The discussion is based primarily on reddening-corrected color-color arrays with particular attention being paid to the following points: 1) discrimination of spectral types in UV color-color plots, 2) location of high V sin(i) and 3) emission-line objects within the plots.

20.05.07 Relative Emission-Line Intensities in the Vela X Nebula. D. E. OSTERBROOK and R. COSTERO, Washburn Obs. - Spectrophotometric scanner measurements were made of two bright filaments in this supernova remnant using the 60-inch Cerro Tololo telescope, and in addition calibrated image-tube spectrograms of these and several other filaments were obtained on other nights. The planetary nebulae IC 418 and NGC 1535 were observed with the same equipment as standard intensity-calibration objects.

The measured [Cl II] (λ4959 + λ5007)/Hα363 ratio is much smaller than in diffuse or planetary nebulae, and corresponds to a temperature of order 5 x 10^4K. This is in good agreement with shock-wave supernova-remnant models calculated by Cox. The measured Hα Balmer gradient is approximately normal. The [Cl II] line ratio indicates N e is of order 10^5 per cc. The [O I] λ6300, 6363 and [N II] λ5199 lines are unusually strong. All these measurements indicate strong ionization and temperature stratification expected under conditions of shock-wave heating. Some of the filaments have relatively lower ionization than others. Our results confirm some of the earlier results of Mine, but disagree with others of his.

20.06.04 The Structure and Apsidal Constant of Spica. J. S. MATHIS and A. P. ODELL, Washburn Obs. - The double-lined spectroscopic and interferometric binary system Spica (α Vir) is analyzed by means of theoretical models. The primary is somewhat evolved from the ZAMS while the secondary is on or near it. Masses, radii, orbital elements, and apsidal motion are taken from Herbst-Evans et al. (1971, M.N.R.A.S. 151, 161). The mass of the primary is 10.8 M☉, so uncertainties in convection theory and opacities are not very important. The flux at 2905 Å has been observed by Bless, Fairchild, and Cade (to be published). It is possible to fit the 2905 flux with the observed value using the model atmospheres of Van Citters and Morton (1970, Astrophys. J. 191, 695), but not with those of Kurucz (Third Cambridge Sym.).

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