ABSTRACTS

70.24.10 Visual and Far Red Surface Photometry of T Mon 1727+50, D. WEISTROP, NASA-GSFC, H.J. REITSEMA, EPL, U. of Ariz., D.B. SHAFFER, NRAO/Phoenix Corp., B.A. SMITH, EPL, U. of Ariz. --Calibrated surface photometry of T Mon 1727+50 has been obtained using a CCD camera on the 90 inch telescope at Steward Observatory. Observations were made in B, V and broad bands centered on 0.75µ and 1.6µ. For each wavelength, the observed spatial intensity distribution can be reproduced by a model consisting of an elliptical galaxy plus bright nuclear point source. Care must be taken in the modelling to account for the effects of atmospheric smearing. Calibrated fluxes are reported for the point source and nuclearity. We compare the spectral intensity distribution of the nebula with that expected for a galaxy. The optical-far red spectral intensity distribution of the point source is compared to observations at other frequencies.

70.25.02 Fluorescence of OH in Comets, D.G. SCHLEICHER and N.Y. ARMSTRONG, U. Mi. -- Calculations of the velocity-dependent fluorescence of OH provide excellent agreement with high resolution spectra of Comets Encke, Kohoutek, Seargent, and Bradfield. Contrary to results by Despois et al (1980 IAU Trans), we find no need to invoke collisions to explain the observed line intensities, even in spectra which are confined to the nuclear region of the comet where collisions should be most important. A by product of these calculations is the velocity dependence of the fluorescence efficiency for the whole 0-0 band, a parameter necessary to convert the numerous, measured OH fluxes into abundances.

70.26.06 The Detection of an Early Type Companion Star to the Classical Cepheid T Mon, J.T. MARISKA, G.A. DUSZKIEWICZ, and U. FELDMANN, NPL. -- Low resolution IUE spectra have been obtained at several phases in the 27-day light cycle of the classical Cepheid variable T Mon. Both short wavelength (1100-2000 Å) and long wavelength (2000-3300 Å) spectra were obtained at the phases: φ = 0.14, 0.21, 0.28, 0.36, and 0.43. Inspection of the short wavelength spectra revealed a strong continuum uncharacteristic of the spectral type of a classical Cepheid (F-G). Furthermore, this continuum is constant in intensity regardless of phase. The long wavelength continuum above 2800 Å varies with phase in a manner qualitatively expected from the optical light curve. Detailed analyses of the spectra lead us to conclude that T Mon has an early type companion with a surface temperature of about 10,000 K. From the distance of T Mon (1090 pc) and published values of the color excess (E(B-V) = 0.41), the companion appears to be of spectral type A0 III. Because some of the observations were made with the small aperture of the IUE instrument, the companion must be <1.5" from T Mon. Possible dynamical effects of the companion are discussed in terms of the optical spectra of the Cepheid. We feel that it is highly desirable to obtain long wavelength high resolution IUE spectra of T Mon. Two of the six classical Cepheids, we have observed with IUE (T Mon and η Aql) have early type companions. This result is consistent with the recent estimate of the percentage (> 25%) of classical Cepheids that comprise binary systems given by Pel (1978, Astr. Ap., 62, 75).

70.27.10 The Polarization Spectra of Radio Outbursts in Extra-Galactic Variable Sources, H.D. ALTER, M.F. ALTER and P.E. Hodge, Univ. of Mich. Radio Astron. Obs. -- We present the results of a study of the polarization of thirteen objects which varied in total flux density by more than 50 percent during the past two years. Seven of these sources are BL Lac-type objects. At the three frequencies used - 4.8, 8.0 and 14.5 GHz - both flat and inverted polarization spectra were observed during the outbursts and the degree of linear polarization ranged as high as 15 percent. In some of the sources (e.g., 0235+164 and 01 287) the polarization position angle was stable throughout the bursts, while in others (e.g., 0V-236 and 0X 036) the position angle varied by more than 90 degrees. We discuss the limitations which these data place on source models. This work was supported in part by the National Science Foundation under grant No. AST78-24192.

70.28.01A WWV Synchronized Microprocessor Clock, G.P. McCOOK, F.P. MALONEY, J.C. LOCHNER, C.C. HARRIS, Villanova University -- We describe the use of a single-board microprocessor to recognize the WWV time signal format in order to synchronize the microprocessor's clock. A noise-suppressing comparator with hysteresis converts the audio signal to a pulse train prior to analysis by the microprocessor. Synchronization is accomplished by an examination of the 800 cycles of the 1 KHz tone which begin each minute (except at the start of each hour), and the subsequent 5 cycles of 1 KHz which begin the seconds.

© American Astronomical Society • Provided by the NASA Astrophysics Data System