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PERIODS AND TYPES FOR SIX RED VARIABLES

Kaiser (1991, 1992) reported the photographic discovery of several new variable stars and the rediscovery of several variables listed in the New Catalogue of Suspected Variable Stars (Kholopov et al., 1982). I have examined these stars on Harvard patrol plates of the Damon blue series (IIa-O) from 1973-1989. This report presents the results for six DHK variables of late spectral type. Except when noted, magnitudes of comparison stars were estimated with an image scale calibrated to photoelectric B magnitudes in nearby fields of the Guide Star Photometric Catalogue (Lasker, Sturch et al., 1988). Equatorial coordinates and alternate identification in various catalogues can be found in the 71st and 72nd Name Lists of Variable Stars, as cited.

DHK 18=TT Sextantis

Spectral type M4. Designated TT Sex in the 71st Name List (Kazarovets et al., 1993). Observed on 202 plates, using a comparison star sequence extended from the two comparison stars for BV 715=RU Sex cited by Strohmeier et al. (1965). Observed range 10.4-11.9 ptg. The light curve (Figure 1) gives a superficial impression of semiregular variations, but detailed plots of each season's data show that no two cycles are similar. DFT analysis found only a weak frequency peak near 700 days, but this period is expressed by only one cycle on the light curve (centered at JD 2446000). Altogether, these observations suggest that variations are of the slow irregular type.

DHK 24=V1060 Tauri

Spectral type C4II. Designated V1060 Tau (Kazarovets et al., 1993). Observed on 163 plates, range 10.3-11.8 ptg. The discovery report (Kaiser, 1992) gave this variable an uncertain assignment to the slow irregular class (Lb:). DFT analysis found a strong frequency peak at $P=1163$ days and a second, moderately strong peak at $P=527$ days. Therefore, this star appears more likely to be SR type with long and perhaps multiple periods.

DHK=V704 Cassiopeiae

Spectral type M1. First noted by Espin (1894). Recently designated V704 Cas in the 72nd Name List (Kazarovets and Samus, 1995). Observed on 175 plates, range 11.4-12.1 ptg. The light curve (Figure 1) shows distinct semiregular variations, with the amplitude of each cycle ranging from 0.2-0.7 magnitude. DFT analysis indicates a period of 379 days, which supersedes the estimate of 350: days in the discovery report.

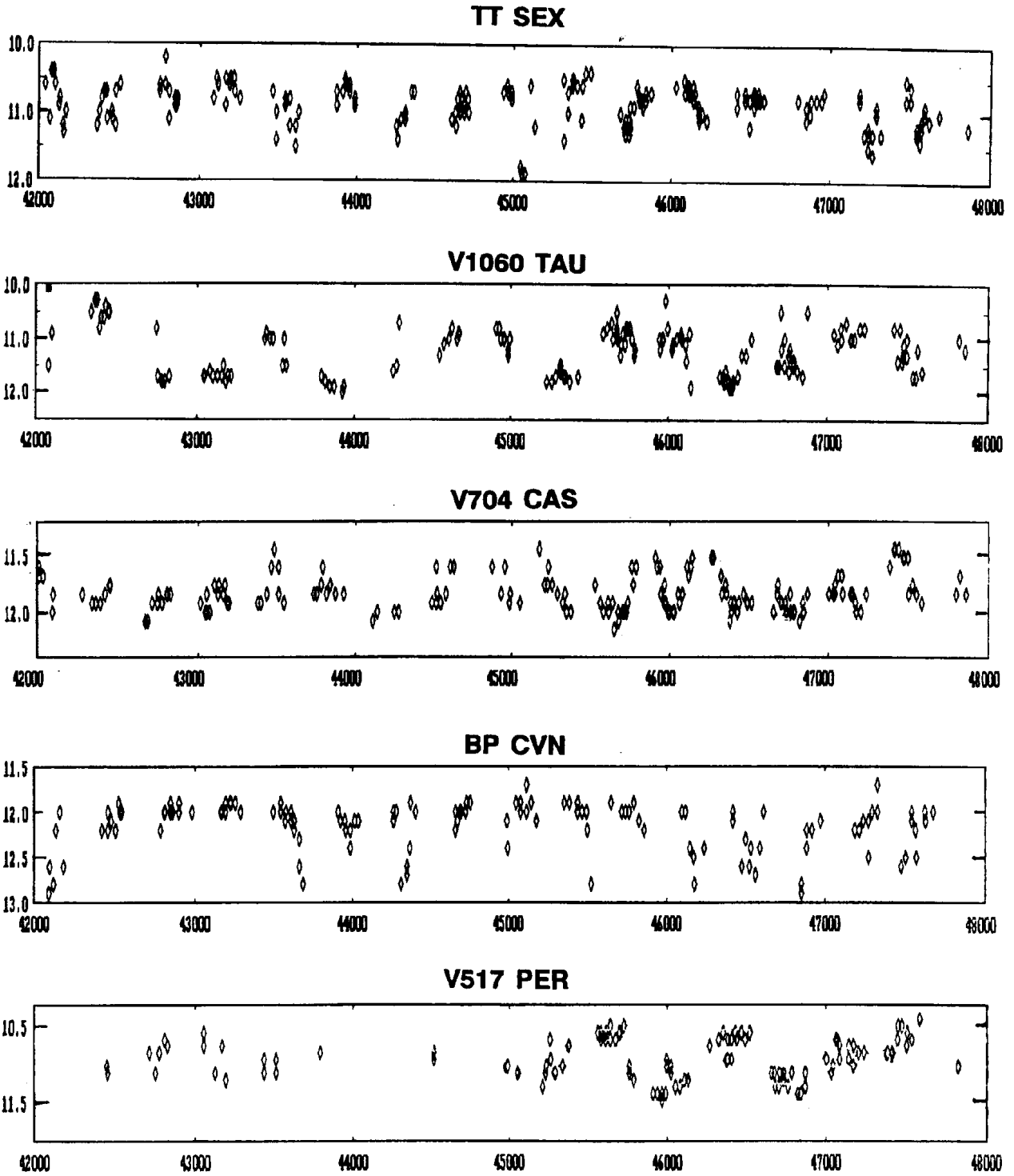


Figure 1

DHK 26=BP Canum Venaticorum

Spectral type K5. Observed on 139 plates. Recently designated BP CVn (Kazarovets and Samus, 1995). Variability was first reported by Weber (1963), who found a range of 11.4-12.1 ptg. I adopted his comparison sequence but found it necessary to add two fainter stars to accommodate my observed range of 11.9-12.8 ptg. The light curve (Figure 1) shows semiregular variations generally characterized by steep minima and broad maxima. DFT analysis found a strong frequency peak at P=317 days, which supersedes the preliminary estimate of 300: days in the discovery report.

DHK 27=V517 Persei

Spectral type M8. Recently designated V517 Per (Kazarovets and Samus, 1995). Observed on 113 Damon plates, using comparison star magnitudes interpolated from the HU Per sequence of Meshkova (1940) less than 1 degree east of this new variable. Observed range 10.5-11.4 ptg. DFT analysis found a strong frequency peak at P=860 days, which is expressed by two prominent cycles on the light curve (Figure 1). However, additional observations from 125 RH series plates, 1931-1952, show only a weak frequency peak at 1067 days and no sign of a period near 860 days. This star is probably a slow irregular variable with characteristic cycles of 800-1100 days and minor variations of shorter durations.

DHK 28=LM Pegasi

Spectral type M2. Recently designated LM Peg (Kazarovets and Samus, 1995). Observed on 166 plates, range 10.6-11.3 ptg. DFT period search found a weak frequency peak equivalent to a period of 72 days, which supersedes the estimate of 150: days in the discovery report. A light curve is not included here; a forthcoming report will present photoelectric photometry that supports the new period. This star appears to be a typical small-amplitude, short period, red semiregular variable.

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