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1992 UBVR I PHOTOMETRY OF FK COMAE

Heckert and Maloney (1992) and Heckert Maloney and Stewart (1992) present photometry from 1988 to 1991 of FK Comae Berenices (HD 117555), the prototype star of the FK Comae class of variable stars. In this paper, I continue this work with 1992 photometry.

I performed new photometry on seven nights between 12 and 27 May 1992 and on 25 July and 4 August 1992. I used the 24 inch telescope at Mount Laguna Observatory operated by San Diego State University. During May the photometer was equipped with a Hamamatsu GaAs phototube operating at -1450V. During July and August this tube was replaced with an EMI 9789 tube operating at -1200V. The Hamamatsu tube was equipped with UBVR I filters, but the less red sensitive EMI tube was equipped with UBVR filters only. The data are transformed to the standard Johnson-Cousins UBVR I system. HD 117567 was the comparison star, and HD 117876 was the check. The check star data show neither systematic differences between the transformed data taken with the different tubes nor evidence for variability in the comparison star. For reasons discussed by Heckert and Maloney (1992), we used the 2.400^d period of Chugainov (1976) to calculate the phases.

TABLE 1

Julian Day	Phase	ΔU	ΔB	ΔV	ΔR	ΔI
2448754.851	0.378	1.434	0.985	0.522	0.285	0.078
2448755.839	0.789	1.451	0.974	0.522	0.289	0.075
2448757.844	0.625	1.461	0.986	0.527	0.297	0.081
2448759.829	0.452	1.425	0.964	0.518	0.282	0.077
2448760.841	0.873	1.449	0.977	0.521	0.287	0.078
2448762.804	0.691	1.482	0.994	0.536	0.297	0.091
2448769.781	0.598	1.472	0.999	0.542	0.301	0.095
2448828.687	0.143	1.333	0.892	0.476		
2448838.696	0.313	1.380	0.927	0.492		

The differential magnitudes are in Table 1, and the B and V light curves are in Figure 1. Minimum light is at about phase 0.65. This phase of minimum light compares to 0.6, 0.15, 0.17, and 0.3 in 1988, 1989, 1990, and 1991 (Heckert and Maloney 1992, Heckert, Maloney, and Stewart 1992). In terms of the starspot model, the major spot group migrates in the sense

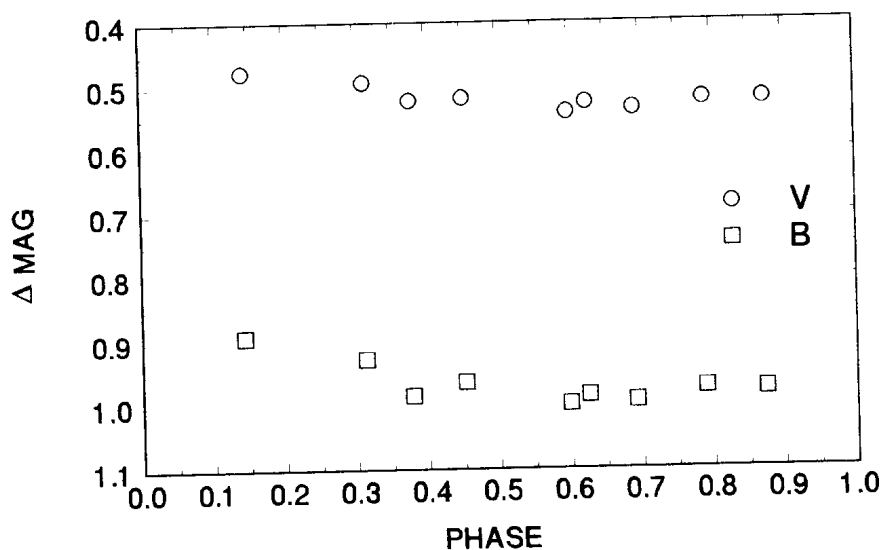


Figure 1. FK Comae-1992

of increasing phase considerably in longitude on time scales of less than one year, but the migration rate seems to vary from year to year. The amplitude of variation in V is about 0.15 magnitudes for 1988, 1989, and 1990 (with small year to year fluctuations), about 0.11 magnitudes in 1991, and about 0.07 magnitudes in 1992. The level of light in V at maximum is about the same for both 1992 and 1990, which is about 0.02 magnitudes brighter than in 1988, 1989, and 1991. I conclude that the major spot group became smaller in 1991 and continued to shrink during 1992. From the levels of maximum light I conclude that there are often smaller spots spread around the star that disappeared or decreased in both 1990 and 1992.

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