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RECENT BEHAVIOUR OF THE YELLOW SUPERGIANT RHO Cas

Rho Cas has previously revealed complex photometric and spectroscopic changes. Quasi-periodicities of various lengths have been suggested, with the most convincing being that of Sheffer and Lambert (1986) who derived a dominant radial pulsation mode of about 520 days from a comprehensive examination of line profile changes. The light variations have had excellent coverage by the visual observers of the AAVSO and appear to show most recently a semi-regular to irregular phasing of approximate amplitude less than 0.4 magnitudes. Photometrically, Leiker, and Hoff (1987) have published the most current comprehensive light curve for JD 2446604 - 6994.

Rho Cas has been added to the long-term monitoring program of the Corralitos Observatory. Observations in BV colors were carried out with the 0.6 m. telescope and single channel photon-counting photometer equipped with an EMI 9924A photo-

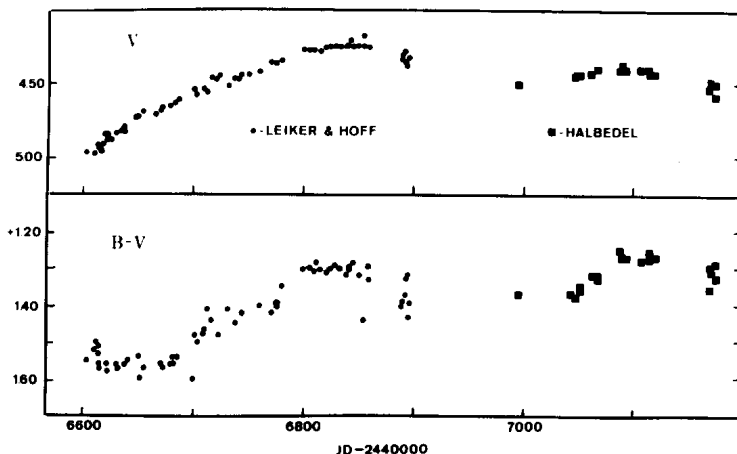


Figure 1. V and B-V observations for Rho Cas.

multiplier tube. The comparison stars used were HD 223173 ($V=5.51$; $B-V=1.65$) and Tau Cas ($V=4.867$; $B-V=+1.116$). No variations greater than 0.01 in either V or $B-V$ were noted for the comparison stars.

The data are shown in Figure 1 graphically and given in Table I. Generally, a gentle decline in V magnitude from Leiker and Hoff's last values and interesting mirrored behaviour in $B-V$ (though of greater range) are noted.

Table I

JD-2440000	V	B-V	JD-2440000	V	B-V
6994.9389	4.49	+1.37	7089.6299	4.40	+1.27
7045.8541	4.45	1.37	7106.7076	4.39	1.28
7046.8291	4.45	1.36	7125.6986	4.39	1.28
7047.8236	4.44	1.38	7126.6313	4.42	1.26
7049.7556	4.42	1.36	7127.6472	4.43	1.27
7050.8486	4.44	1.35	7128.6264	4.42	1.27
7051.7069	4.43	1.36	7169.6035	4.53	1.36
7062.8014	4.43	1.32	7170.6160	4.48	1.30
7066.7938	4.39	1.32	7173.6062	4.51	1.31
7067.6924	4.40	1.33	7174.5840	4.58	1.29
7087.8312	4.41	1.25	7175.5917	4.49	1.33
7088.7785	4.37	1.27			

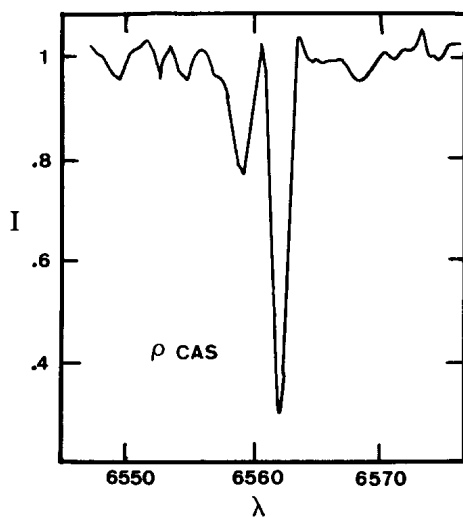
Figure 2. Mean $H\alpha$ line profile for Rho Cas.

Table II

H α feature mean radial velocities:	
emission peak	-71.3 km s ⁻¹
line profile center	-63.6
deepest absorption	-48.4
mean stellar radial velocity:	
	-44.5 \pm 5.1 km s ⁻¹ (from 12 lines)

Two spectra of Rho Cas were obtained by the author with the Kitt Peak Observatory coudé feed telescope and CCD camera. The spectra were centered at H α and showed the presence of a single emission peak distorting the profile of the line to the blue. The spectra were taken on JD 2447119.7208 and 7122.6313.

There was shown no sensible change in line profile or radial velocity between the two nights. Table II lists the mean radial velocities, and Figure 2 the line profile.

E.M. HALBEDEL
 Corralitos Observatory
 P.O. Box 16314
 Las Cruces, NM 88004
 U.S.A.

References:

- Leiker, P.S., and Höff, D.B., 1987, Inf. Bull. Var. Stars, No. 3Q20
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