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RADIAL VELOCITY MEASUREMENTS OF α Pyx AND ζ CMa

In 1980 a spectroscopic monitoring of bright southern B stars using the 90cm telescope of Manuel Foster Observatory, Santiago de Chile, was started (Sterken and Vogt, 1982). The programme consists of systematic observations of southern early-type B stars which are too bright to be observed photometrically. During the first months of operation a one-prism spectrograph with a dispersion of 36 Å/mm at Hγ was used.

ζ Canis Majoris (HR 2282, B2.5V, V=3.02, B-V=-.19) is known since long as a long-period spectroscopic binary (Curtis, 1908). Many radial velocities have been published since then, but the star has never been monitored for short-term variability. Its spectral type and luminosity class locates its position in the H-R diagram close to the locus of the β Cep stars. ζ CMa was monitored during 4 nights in December 1980 and January 1981.

From the large scatter in radial velocities obtained on a night-to-night basis, and considering the fact that α Pyxidis (HR 3468, B1.5III, V=3.68, B-V=-.18) has the right spectral type and luminosity class for being a β Cep star, Van Hoof (1973) concluded that it is probably a β Cephei variable. Balona (1977) pointed out that the published radial velocities indicate variation, but he found the star constant in V. We monitored the star during 5 nights in December 1980 and March 1981. Kodak IIa-O emulsion has been used; all plates were measured with the Grant Spectrocomparator at the headquarters of ESO in Garching. The table gives the plate numbers as listed in the logbook of the Manuel Foster Institute, heliocentric date and heliocentric velocity. For

Heliocentric radial velocities α Pyx = HR 3468

Plate nr	JD-2440000	RV	Plate nr	JD-2440000	RV
65	4589.623	5.9	308	4680.745	29.1
66	.648	12.4	309	.758	27.8
68	.686	14.3	310	.773	20.8
74	.807	17.7	311	.784	20.7
75	.818	12.2	312	4682.602	24.4
170	4614.577	12.5	313	.614	23.2
171	.590	14.4	314	.626	20.4
172	.606	16.6	315	.638	23.6
173	.616	21.2	316	.650	23.7
174	.628	15.3	317	.660	20.6
175	.640	19.1	318	.676	10.6
176	.656	21.9	319	.687	19.4
177	.670	19.0	320	.698	19.2
178	.680	22.0	321	.710	18.5
179	.689	14.2	322	.723	23.5
180	.700	30.1	323	.738	25.1
181	.710	20.6	324	.750	21.2
182	.724	20.2	325	.762	16.9
183	.738	52.1	326	.773	24.3
184	.748	19.5	327	.788	25.0
185	.759	6.4	332	4683.561	23.2
290	4677.647	16.8	333	.578	23.1
291	.658	25.2	334	.593	21.2
292	.671	35.1	335	.606	18.6
293	.685	24.0	336	.621	11.5
296	4680.595	26.4	337	.626	18.5
297	.606	13.0	340	.666	31.7
298	.619	7.4	341	.678	23.5
299	.631	8.1	342	.690	21.1
300	.644	13.6	343	.705	17.3
301	.658	19.8	344	.719	19.4
302	.669	16.4	345	.731	10.8
303	.682	9.4	346	.744	21.3
304	.695	24.2	347	.756	27.1
305	.708	16.6	348	.768	7.3
306	.713	37.7	349	.779	24.0
307	.734	23.2	350	.791	45.5

Heliocentric radial velocities ζ CMa = HR 2282

Plate nr	JD-2440000	RV	Plate nr	JD-2440000	RV
46	4590.330	50.3	109	4611.447	78.2
47	.339	39.6	111	.457	26.0
48	.362	25.4	112	.471	16.0
49	.371	33.2	113	.477	21.2
50	.386	31.0	114	.487	19.6
54	.463	42.0	116	.504	23.2
55	.470	33.1	117	.511	27.7
56	.479	31.8	118	.517	35.6
58	.516	20.9	119	.525	59.8
59	.529	25.7	132	4614.319	51.7
61	.545	45.9	133	.327	62.4
78	4595.316	24.9	134	.338	46.5
79	.325	26.8	135	.342	48.4
80	.347	34.8	136	.349	28.6
81	.356	8.2	137	.358	33.7
82	.373	38.0	139	.373	36.7
83	.382	0.7	140	.381	35.6
84	.390	17.7	141	.388	33.7
85	.400	45.7	142	.398	19.0
86	.413	27.7	143	.409	30.9
88	.432	13.0	144	.424	26.3
89	.463	36.1	146	.440	25.7
90	.487	23.5	147	.449	16.2
91	.512	29.5	148	.456	29.2
92	.518	30.5	149	.469	30.6
97	4611.318	22.7	150	.494	16.8
98	.329	41.1	151	.501	41.4
99	.337	32.6	152	.510	35.1
100	.346	53.9	153	.519	10.9
101	.360	47.0	154	.527	35.5
102	.369	45.1	155	.537	28.7
105	.398	38.1	156	.544	38.9
107	.431	34.4			

ζ CMa the radial velocities are the means of the velocities of the He I 4388 and 4471 lines; in the case of α Pyx the He I 4144, 4388 and 4471 lines were used. The mean error on one velocity determination is estimated as 6-8 km s^{-1}. On JD 244-4595, -4611 and -4614 the radial velocity range of ζ CMa is definitely larger than the inaccuracy of the measurements, but the form of the radial velocity curve is too irregular to draw any conclusion regarding the nature of the variations. The measurements of α Pyx yield a relatively well defined sinusoidal velocity curve on JD 2444680, with a probable period of about 5 hours and a range of nearly 20 km s^{-1}. On the other nights the variations were more erratic, but with a smaller amplitude. The presence of this short-term variability makes α Pyx a suitable target for a more elaborate study using a larger telescope equipped with a grating spectrograph.

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